KASE STATWARE FOR TRADESTATION

Kase StatWare v9.8.1

January 5, 2015

This manual was written for TradeStation 9.5 and refers to Version 9.8.1 of the StatWare indicators. Users of older versions of TradeStation™ may notice slight differences between the manual and the program.

We make every effort to keep our manual up to date and accurate. If you have any questions or experience any problems, please contact our offices.

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Introduction

Trading is primarily a function of three tasks: entry, money management and exit. You will find that the Indicators in the Kase StatWare© package will help you to perform all three tasks in a more efficient and successful manner. Where many older indicators are based on empirical observations, we now have the ability to derive indicators from the natural structure of the market itself. Patterns that were difficult to observe with primitive tools now emerge with computer-based statistical examination.

This manual has been written to explain the StatWare© indicators and to give traders an increased understanding of the markets in order to diminish risk and increase profits. Keep in mind that the Kase indicators are tools that support a methodology and not a "black box" system. A trader's personality and experience will play a role in his or her experience in using Kase StatWare©.

Kase's Trading Philosophy

It is Kase and Company Inc.'s philosophy to view the markets scientifically and accurately without making the procedure for doing so too complex. Through the application of statistics and mathematics a whole new generation of indicators has been made possible. It is our hope that using our piece of the future will be enjoyable and profitable for you.

Before Getting Started

Load TradeStation™ and go through its manual to become familiar with the basics. In this manual it is not our aim to explain TradeStation™, except where it is directly an issue regarding the use or the functionality of the Kase Indicators. For help with the functionality of TradeStation™ please call their technical support, as appropriate.

Kase StatWare Version 9.8.1

Table of Contents

Introduction i

Kase's Trading Philosophy i

Before Getting Started i

CHAPTER 1 - Getting Started

1.1 Manual Conventions 1

1.2 Activation and Deactivation of Indicators 1

CHAPTER 2 - Setting Up Charts

2.1 Preliminary Settings 2

2.2 Setting Bar Length on Charts 2

2.3 Time-Based Charts 3

2.4 Tick Volume Charts 3

2.5 KaseBar Charts 4

2.6 Adding Indicators to your Charts 5

2.7 Formatting the Indicators 6

2.8 Setting Up Indicators in Different Subgraphs 6

2.9 Organizing Your Workspace 7

CHAPTER 3 - Importing PassKey Updates

3.1 PassKey Updates 8

3.2 Importing New PassKey Files 8

CHAPTER 4 - The Indicators

4.1 Core Indicators 10

4.1.1 The Kase DevStops (*KDevStops_v981 T and K) 10

4.1.2 The Kase Easy Entry System (*KEES_v981) 12

4.1.3 Kase Momentum Indicators (*KasePO_v981 and *KaseCD_v981) 15

4.2 Background Indicators 20

4.2.1 The Kase Permission Stochastic (*KPermSto_v981) 20

4.2.2 The Kase Permission Screen (*KPermFunction_v981) 21

4.2.3 KaseSwing (*KaseSwing_v981) 22

4.2.4 The Kase Reversal Amounts (*KRev_v981 T and K) 25

4.3 Candlestick Indicators 26

4.3.2 The Kase Engulfing Candlestick Lines (..KaseEngulfing_v981) 26

4.3.4 The Kase Evening & Morning Star (..KaseEveMrnStr_v981) 27

4.3.5 The Kase Hammer and Hanging Man Patterns (..KaseHamHang_v981) 28

4.3.6 The Kase Harami Line and Stars (..KaseHarami_v981) 29

4.3.7 The Kase Piercing and Dark Cloud Cover (..KasePierDkC_v981) 30

CHAPTER 5 - Trading Guidelines

5.1 Introduction to Trading with StatWare 31

5.2 Setting Up Charts 31

5.3 Entering a Trade 31

5.3.1 Initiating a Trade from a Flat Position 32

5.3.2 Re-Entry System 32

5.3.3 Reversal Signals 33

5.4 Placing and Managing Stops 33

5.5 Scaling Up 34
5.6 Exiting a Trade 36
5.6.1 Exit Signal 1 - Divergence on KasePO AND KaseCD 37
5.6.2 Exit Signal 2A – Single Divergence on KasePO OR KaseCD 37
5.6.3 Exit Signal 2B - PeakOut Late In the Direction of Trend 38
5.6.4 Exit Signal 3 - KCDpeak 38
5.6.5 Exit Signal 4 - PeakOut Early In the Direction of Trend 39
5.6.6 Exit Signal 5 – No Signal 39
5.6.7 Inactivity Exit Guidelines 39
5.6.8 Position Holders - Daily Chart Exit Rules and Stops 39
5.6.9 "Choppy Market" Trading Guidelines 40
5.7 Trading with the Kase Candlestick Indicators 40

Chapter 6 - Kase StatWare Functions

6.1 Introduction to Kase StatWare Functions 43
6.2 Momentum Indicators: KasePO and KaseCD 43
6.3 Entry Signals: Kase Easy Entry System (KEES) 50
6.4 Rigorous Exit System: The DevStops 52

Chapter 7 - Troubleshooting

7.1 General Problems 54
7.2 Indicators Coming Up Zero, Nothing Is Plotting 54
7.3 Indicator has been added but is Not Plotting 54
7.4 Unable to See the Indicators Well 55
7.5 My Indicators Take a Very Long Time to Initiate 55

CHAPTER 1- Getting Started

1.1 Manual Conventions

- **Bold** – Cold is used to identify indicator names
- ***Bold*** **-** Bold Italic is used to identify menu names, command buttons, tabs, etc.
- `Courier` – Courier is used to identify names of indicator inputs.

1.2 Activation and Deactivation of Indicators

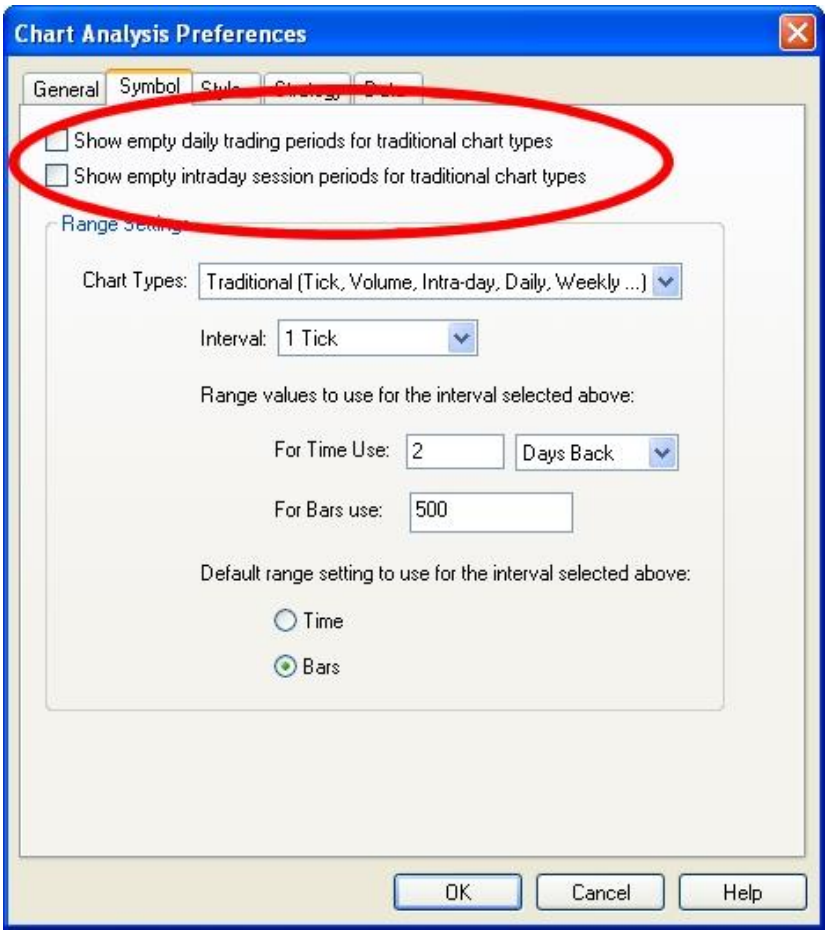
If you have been sent or given StatWare in a deactivated format at a conference or as part of a promotion and would like to activate your trial, please contact the Kase Call Center. If you are currently on a trial, the indicators will automatically deactivate at the end of your trial period unless you contact the Kase Call Center to commence a lease. If you are already leasing StatWare, a new password file will be sent to you prior to the expiration of your current one. If for any reason, you do not receive a timely password file, please contact the Kase Call Center. Please refer to Chapter 3: Importing Password File Updates for more information on how to prevent your indicators from deactivating.

If you are upgrading from a previous version of StatWare, you may remove your old StatWare indicators by right clicking on their names in the ***Open Easy Language*** dialog box (found in the ***File*** menu) and selecting ***Delete***. Please note that keeping your old indicators will not prevent your new indicators from importing or from working properly.

CHAPTER 2 - Setting Up Charts

2.1 Preliminary Settings

Open ***View, Chart Analysis Preferences,*** click on the ***Symbol*** tab and **un**-check both ***Show empty daily trading periods*** and ***Show empty intraday session periods***, as shown below. Click ***OK***.



2.2 Setting Bar Length on Charts

Kase's philosophy is to "scale-up" from shorter-term to longer-term trades using three chart periods. For active traders, we recommend using charts roughly equivalent to 10 to 15 minutes, 20 to 30 minutes and 45 to 90 minutes depending on the level of activity and degree of trendiness.

The more the market is trending, the longer the time frames, and the more choppy the market, the shorter the time frames. Also active traders may decide to scale up to longer time frames during well-established trends. We recommend less active traders hold trades for at least a few days to a number of weeks to look for long-term entry and exit signals on one-quarter to one-third day charts, half day charts, and daily charts. There are three ways Kase recommends to determine bar lengths.

2.3 Time-Based Charts

The first type of bar chart uses time bars. In these charts, one bar forms for each time period that elapses, regardless of market activity.

When using time bars, first determine the approximate number of minutes you wish to use and then determine the closest time bar length that divides evenly into the trading day. When using a longer number of minutes, such as 90, it's ok to have shorter bar on the day's close. So for example, in a five and one-half hour trading day, one could set the bars to five 60 minute and one 30 minute bar, or use six 55 minute, or five 66 minute bars. Using a slightly shorter bar at the end of the day emphasizes the late day activity going into the close.

2.4 Tick Volume Charts

The second way to set up bar charts is using tick volume charts. Each "tick" a reported traded price. A tick volume bar of 200, for example, would contain the price activity over 200 price changes or trades.

There are two ways to set up a tick volume chart. The first is to determine how many bars per day session are generated by the time bar you have been comfortable with, and set up a tick bar chart that generates a similar number of bars per day. The second is to use the Average True Range indicator to determine the average true range of the time bar you are comfortable with, and then use a tick bar length that generates a similar value. For tick volume bars less than 500, you might want to see if a Fibonacci number, such as 89 ticks per bar works for you. For tick volume bars larger than 500, the suggestion is to use round numbers.

2.5 KaseBar Charts

TradeStation™ 8 now includes KaseBars. KaseBars are equal TrueRange bars previously known as Kase Universal Bars. The KaseBar method creates bars with a TrueRange based on an input Target Range target by the user, such as 10 cents, 20 points, etc., and uses only real price data. KaseBar charts look like traditional bar except that, because the Target Range dictates the size of each bar, the bars are all approximately the same size (True Range). The KaseBars can be generated by using one minute as the smallest building block (or Interval) for bars, or one tick, if looking back 26 days or less (because of TradeStation's tick data limits). There are a number of ways to set the Target Range.

1. As a guideline, the target range should be no less than five times the average difference between ticks, or the range of a five-minute bar. So, for example, if a typical tick chart looked like this "10 – 12 – 14 – 12 – 14 – 16", then the average tick difference is "2" and the minimum range one would use is "10".
2. Set up the normal time or tick volume chart you would usually use, such as 15 minute, 30 minute, or 610 tick, etc. Plot the Average TrueRange (ATR) on that chart. Whatever the ATR is of the chart you normally use should be roughly equal to the Target Range you choose to input.
3. You can always just choose a range that seems appropriate to you. Visually, the bars should look about the same size. If there is a large variation, it usually means that the target range you have set is too small.
4. Check the KaseBar Average TrueRange by plotting it on your KaseBar chart. Adjust your target up or down as necessary to result in the specific range you want.

For more information about KaseBars view the TradeStation™ Help files and search for KaseBars or contact us at 505-237-1600.

2.6 Adding Indicators to your Charts

Now that your charts are set up, add the indicators to them.

1. Choose ***Insert*** from the menu bar.
2. Choose ***Indicator*.**
3. The indicator library is listed alphabetically. All of the Kase indicators start with *K or ..K. Below is a list of indicators that should be included with your package.

2.6.1 Core Indicators

*KDevStops_v981T

*KDevStops_v981K

*KEES_v981

*KasePO_v981

*KaseCD_v981

2.6.2 Background Indicators

*KPermSto_v981

*KPermFunction_v981

*KaseSwing_v981

*KRevAmounts_v981T

*KRevAmounts_v981K

2.6.3 Candlestick Indicators

..KaseEngulfing_v981

..KaseEveMrnStar_v981

..KaseHamHang_v981

..KaseHarami_v981

..KasePiercing_v981

The T or K after the indicator name means that the defaults are set for “Time or Tick” or “Kase” bars. Hold down the ***Ctrl*** key and click each indicator you wish to add. We suggest that you load at least the four core indicators. These four indicators comprise those used in the basic Kase approach to trading with StatWare. The other indicators might be placed on the chart as “hidden” or used on a secondary chart for reference. The Candlestick Indicators are normally only used on one-quarter day charts and higher.

2.7 Formatting the Indicators

The indicators come preset with all the optimized defaults, so adjustments to the their inputs is not required. Nevertheless, if you wish to change the indicator inputs, select ***Format*** from the menu bar and click on ***Analysis Techniques, etc*.**

By selecting the ***Inputs*** tab, you may change the default settings for certain variables. The default settings have been set to their optimal values, so we recommend staying with the preset defaults except in a few special circumstances that will be described in the Chapter 5: The Indicators.

By selecting the ***Alerts*** tab, you may select whether alerts generated by a given indicator are ignored and, if not, what action should be taken upon an alert being triggered.

By selecting the ***Color*** tab, the colors used by a given indicator may be changed.

2.8 Setting Up Indicators in Different Subgraphs

1. Go to ***Format, Analysis Techniques***.
2. Select the indicator to ***Format*** and choose the ***Properties*** tab.
3. Select ***Subgraph***.

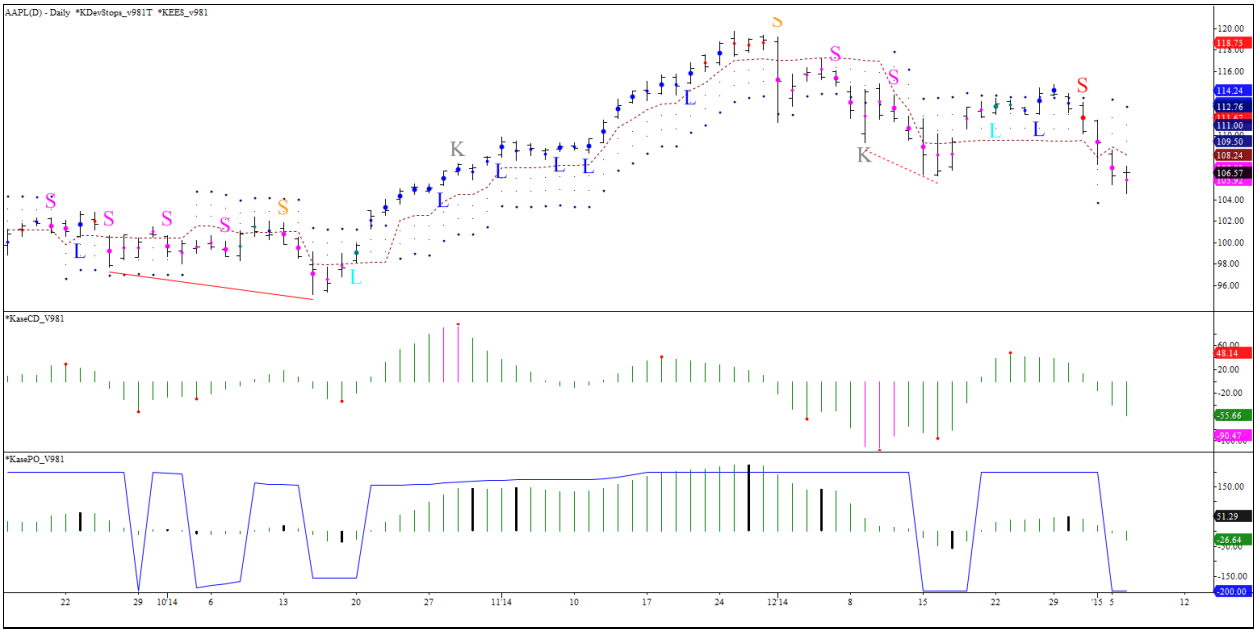
2.9 Organizing Your Workspace

Generally, four "core" indicators (either the T indicators or K indicator for one DevStop) are set up as follows:

- The entry indicator ***KEES_v981** as well as the ***KDevStops_v981T** or **K** indicator are placed in sub-graph 1 along with, and scaled to, the price data.
- The ***KeesCD_v981** is placed in sub-graph 2, scaled to "screen".
- The ***KeesPO_v981** is placed in sub-graph 3, also scaled to "screen".

With all four "core" indicators on the screen, your chart should appear as follows:

Typical Kase StatWare Chart Set-Up



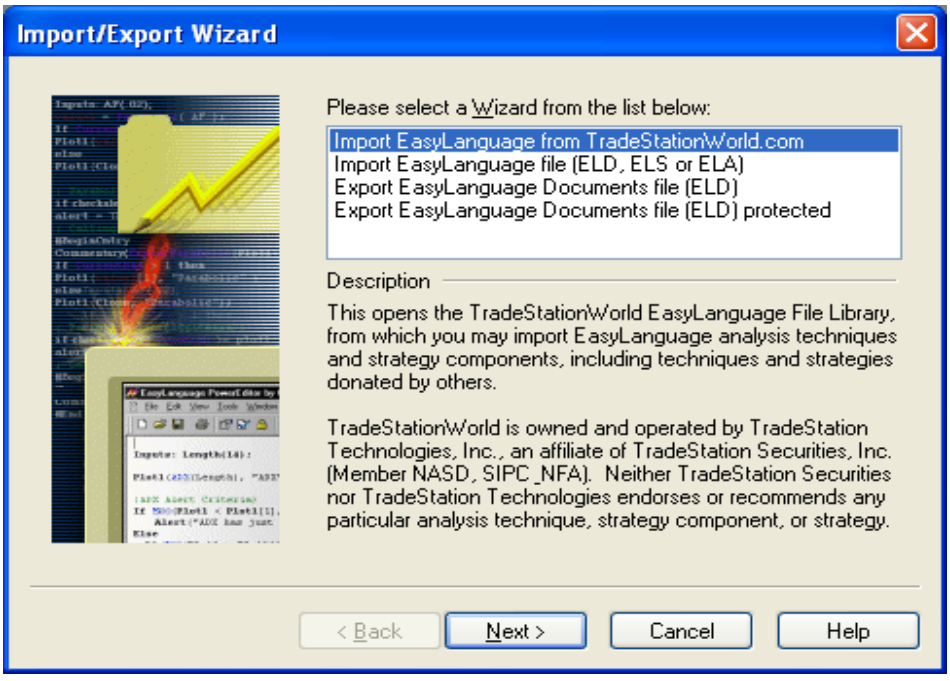
CHAPTER 3 - Importing PassKey Updates

3.1 PassKey Updates

Kase StatWare© is enabled with a password called a PassKey. If you are on a trial of StatWare©, when your trial password expires, please contact the Kase Call Center for a new password, or to sign up for a lease. When you sign up for a lease, or if your trial is extended, you will be sent a new password, which will need to be imported into TradeStation™.

3.2 Importing New PassKey Files

1. You password will be emailed to you in a file. The file will have a name of the form: PASSKEY90_20121031.ELD. The numbers in the file name signify when the password file will expire. In the example, October 31, 2012.
2. Save the file to a local directory.
3. In TradeStation™, select ***File***, then, select ***Import/Export EasyLanguage*** from the menu. The following dialog box will appear:


Import/Export Wizard
Please select a Wizard from the list below:
Import EasyLanguage from TradeStationWorld.com
Import EasyLanguage file (ELD, ELS or ELA)
Export EasyLanguage Documents file (ELD)
Export EasyLanguage Documents file (ELD) protected
Description
This opens the TradeStationWorld EasyLanguage File Library, from which you may import EasyLanguage analysis techniques and strategy components, including techniques and strategies donated by others.
TradeStationWorld is owned and operated by TradeStation Technologies, Inc., an affiliate of TradeStation Securities, Inc. (Member NASD, SIPC_NFA). Neither TradeStation Securities nor TradeStation Technologies endorses or recommends any particular analysis technique, strategy component, or strategy.
< Back
Next >
Cancel
Help

4. Highlight ***Import EasyLanguage File (ELD, ELS, or ELA)*** and click ***Next***

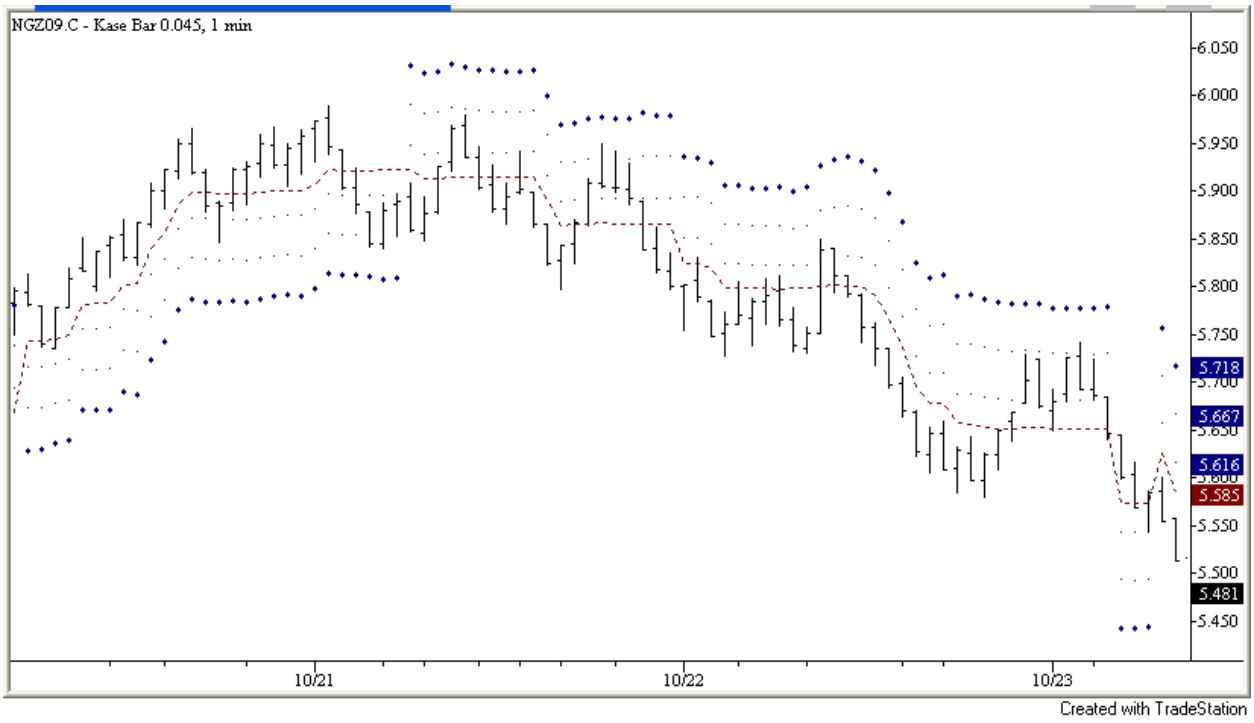
5. Click the ***Browse*** button and navigate to the folder where you saved the new password file. Highlight the file and click ***Open***. The path of the StatWare ELD file should now appear in the File Name box. Click ***Next***
6. In the next menu, ensure that the box next to Function is checked. Click ***Next.***
7. Now, a function named passKey_v981 should appear. Make sure that the box to the left of it is checked and click ***Finish.*** Click ***OK*** or ***Yes*** to any message boxes that come up, including one asking whether you'd like to replace the existing passKey_v981 function. Your indicators will now continue to function until the date in the name of your password storage file.

CHAPTER 4 - The Indicators

4.1 Core Indicators

4.1.1 The Kase DevStops (*KDevStops_v981 T and K)

The Kase DevStops are the closest ideal stops can be in the real world. DevStops account for volatility (which is directly proportional to risk), for the variance of volatility (how much volatility changes from bar to bar), and for positive volatility skew (the degree an asymmetrical right tail extends to more positive values than a normal distribution).



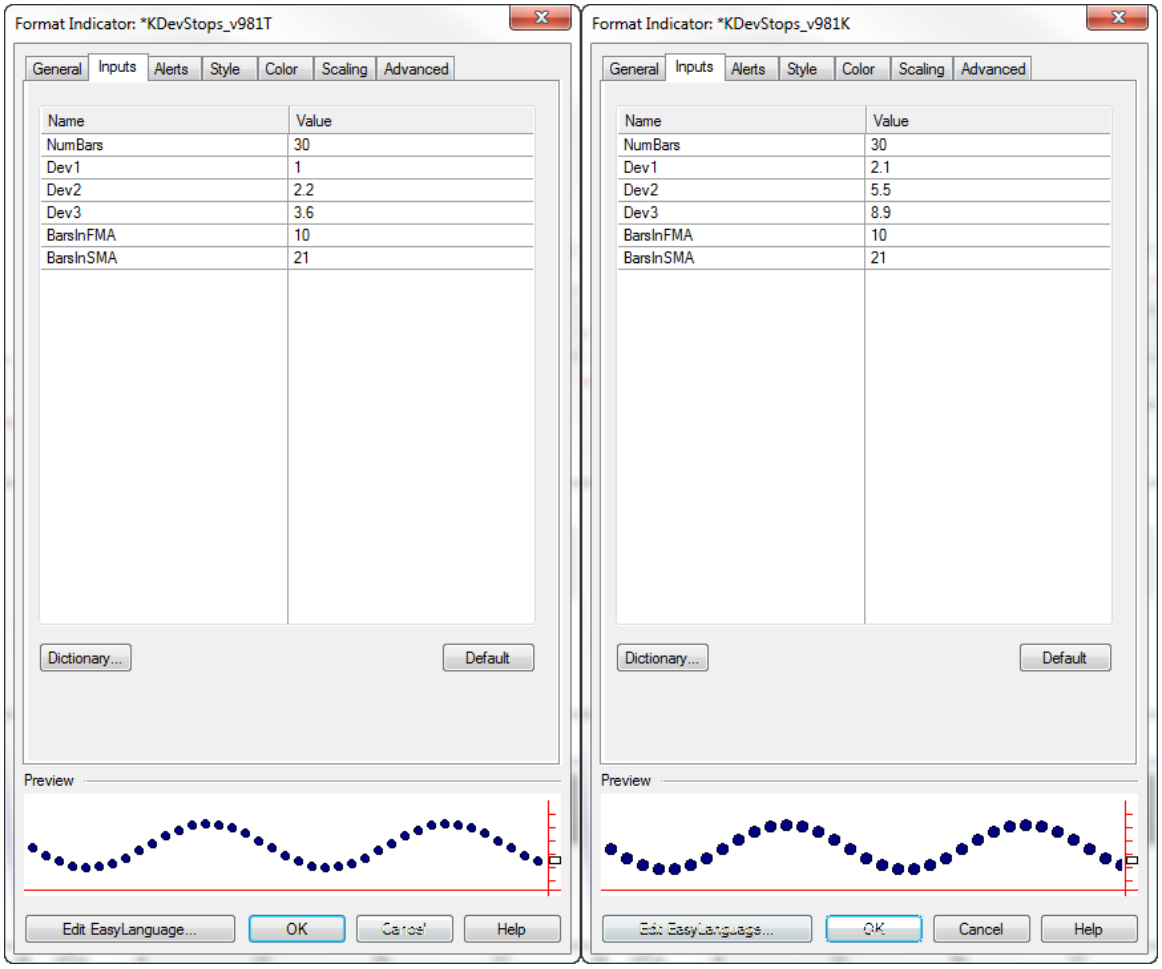
DevStops allow profits to run and losses to be minimized. Setting stops based on statistical probabilities of being stopped out allows profit to be taken or losses to be cut at levels where the probability of a particular trade remaining profitable is low.

Two versions of the Kase DevStops are included in the installation package for StatWare v_90; ***KDevStops_v981T and *KDevStops_v981K.** This is because the default settings are slightly

different. ***KDevStops_v981T** uses standard deviations of 1, 2.2 and 3.6 equivalent to the normal bell curve's 1, 2, and 3. The ***KDevStops_v981K** uses 2.1, 5.5 and 8.9 equivalent to the time or tick volume interval's stop levels.

4.1.1.1 KDevStops Inputs

`NumBars` is the number of bars used to calculate the average Double True Range (DTR) and its related standard deviation.



`Dev1`, `Dev2`, and `Dev3` are three stop levels associated with reversals equivalent to the input Value against the highest high if long or lowest low if short. The default values of these variables are recommended most of the time. However large gaps or large changes in price during short period can blow out the standard deviation, in which case, the stops may be narrowed to compensate for this by decreasing the "Value". For example, Dev2 for "_v981T" may be

decreased from 2.2 to 1.7. During very choppy markets where stops may be hit due to erratic market activity, and not due to a statistically significant move, the stops may be widened. In this case, Dev2 might be increased from 2.2 to 2.8.

`BarsInFMA` and `BarsInSMA` are the number of bars used in the calculation fast and slow moving averages. These moving averages are used to default the DevStops to "long" when the FMA is above the SMA or "short" when the FMA is below the SMA. During very trending markets the moving average can be limited from "flipping" by lengthening the value settings, or during oscillating markets the moving averages can be made to flip sooner by shortening the value setting.

4.1.1.2 KDevStops Color and Style Defaults

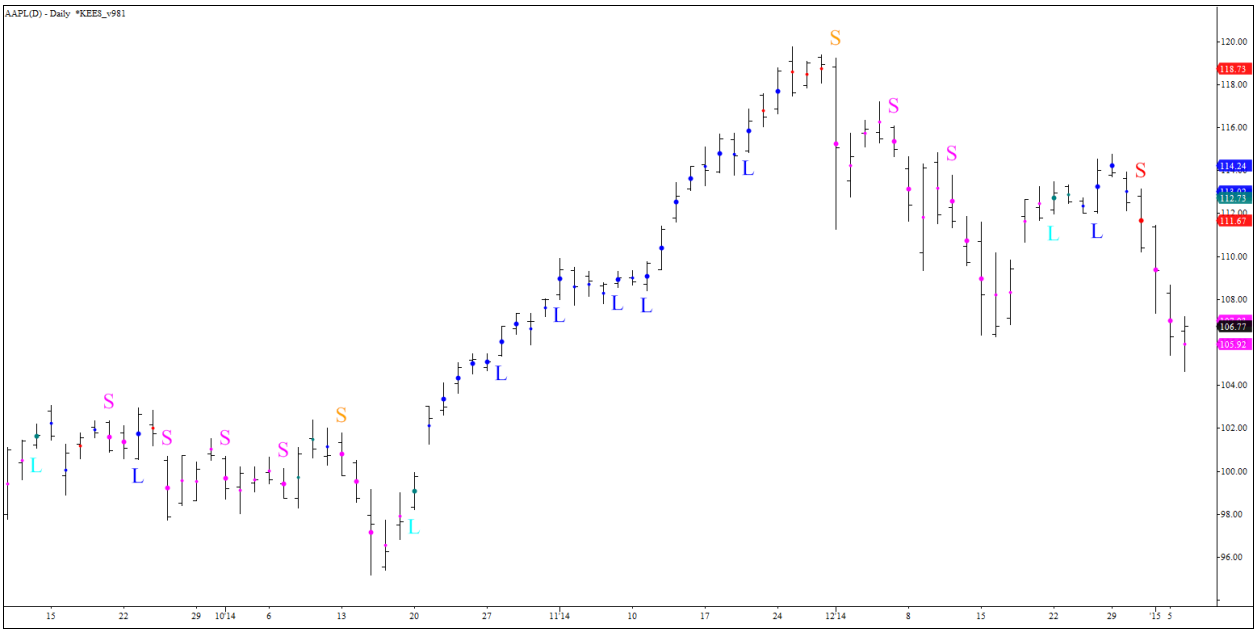
Plot Name	Description	Color	Type
Warning	Warning Line Stop	Dark red	Dashed line
Dev1	First Level Stop	Dark red	Point
Dev2	Second Level Stop	Dark red	Point
Dev3	Third Level Stop	Dark blue	Point medium

4.1.2 The Kase Easy Entry System (*KEES_v981)

As the name implies, KEES is an easy to use entry system. It examines a combination of underlying momentum indicators, as well as embeds signals from the Kase Permission Screen and KaseSwing. KEES generates S's for valid short entries and L's for valid long entries, which means the signal takes place after a valid swing.

For those wishing to have more information about the signals, KEES defines two types of signals, "first" class meaning that the signal is in the same direction as that of a higher bar length filter

and “second class” meaning that the signal is not in the same direction as a higher bar length filter. Each bar has color-coded points to denote first or second-class long and short signals. Small points are used for bars that do not have the proper structure to allow an entry, for example, a first class buy bar with a down close, and a lower high and lower low. Large points are used for bars that do have the proper structure to allow an entry such as a first class buy bar that had a higher high, higher low and closed up, but do not follow a valid swing.



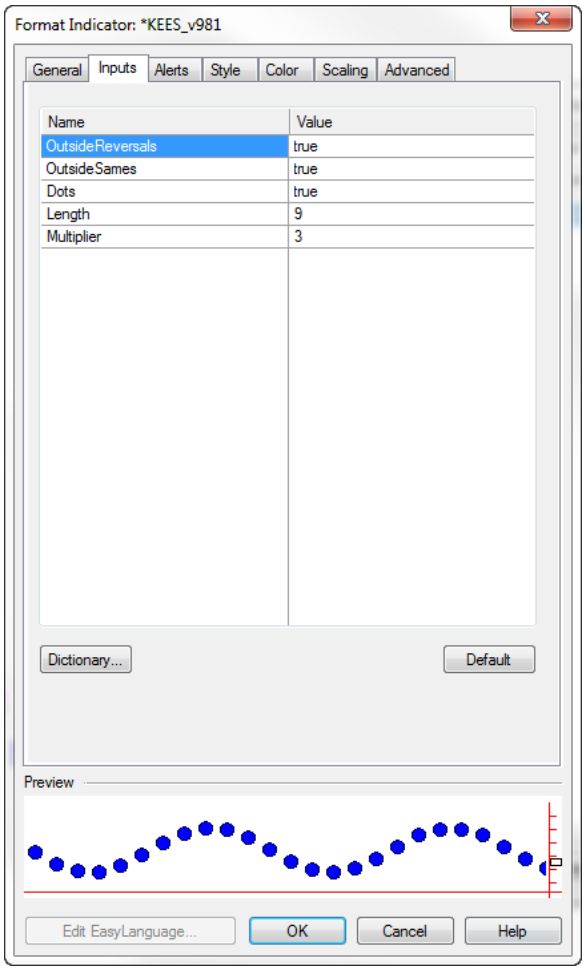
Traditionally, Kase has taught traders to take second entry signals. This means that the first signal in a new trend is treated as a warning signal and the second signal after a valid pullback is taken as the entry. This is a more conservative strategy, but does not have to be deployed by more aggressive traders. KEES identifies the first signal and color codes it light blue for longs and orange for shorts.

4.1.2.1 KEES Inputs

`OutsideReversals:` is used to control the entry rules used for outside bars. An outside bar is a bar that has a higher high and lower than previous bar. This variable only effects outside bars that reverse the direction of the close when compared to the previous bar. The rule comes into play when the variable is set to true.

`OutsideSames:` is used to control the entry rules used for outside bars. An outside bar is a bar that has a higher high and lower than previous bar. This variable only effects outside bars that close in the same direction of the previous bar. The rule comes into play when the variable is set to true.

`Dots:` is used to turn the color coded dots on and off for each bar. These dots help traders identify the underlying permission and class for each bar.



`Length:` is the value used for the momentum indicator lookback that is applied to the underlying synthetic longer bar length filter.

`Multiplier` is the number of bars used to create the synthetic longer bar length. For instance, if **KEES_v981** is applied to a 10-minute chart and `Multiplier` is set to 3, then the last three 10-minute bars are combined to create a synthetic 30-minute bar.

4.1.2.2 KEES Color and Style Defaults

Plot name	**Description**	**Color:**	**Type:**
L1 Entry	Entry Long 1st Class	Blue	Large Point
L2 Entry	Entry Long 2nd Class	Dark Cyan	Large Point
L1	Filtered Long 1st Class – No Entry	Blue	Point
L2	Filtered Long 2nd Class – No Entry	Dark Cyan	Point
S1 Entry	Entry Short 1st Class	Magenta	Large Point
S2 Entry	Entry Short 2nd Class	Red	Large Point
S1	Filtered Short 1st Class – No Entry	Magenta	Point
S2	Filtered Short 2nd Class – No Entry	Red	Point

4.1.3 Kase Momentum Indicators (*KasePO_v981 and *KaseCD_v981)

The KasePO and KaseCD are momentum indicators derived from a mathematically sound, statistically based evaluation of trends and is used similar to traditional momentum indicators. Both momentum indicators automatically adapt for changes in dominant cycle length and volatility. These indicators signal the following.

1. Overbought or Oversold conditions. The KasePO and KaseCD identify overbought and oversold conditions with “PeakOut” signals, shown by a “P” for the KasePO PeakOuts and a “K” for the KaseCD PeakOuts. A PeakOut is a positive histogram peak above an overbought line or a negative histogram peak below an oversold line. The Signals are colored when they occur under normal conditions and gray when they are weak. Weak signals indicate that the confirmation bar closed against the direction of the signal (i.e. a bearish PeakOut when the confirmation bar closes up).
2. Momentum Divergence. The indictors generate standard bullish and bearish divergence signals.
    a. Bearish divergence takes place when prices have made a higher or equal high and a momentum indicator has made a lower or equal positive peak.
    b. Bullish divergence takes place when prices have made a lower or equal low peak and a momentum indicator has made higher or equal (i.e. less negative) negative peaks.
    c. Normal signals are shown as a solid line (green for KasePO and red for KaseCD)
    d. Weak signals are shown as a dotted line (green for KasePO and red for KaseCD)

The KaseCD is a sensitive, second derivative indicator, calculated in the same way as the MACD histogram is calculated from a moving average oscillator. Namely, the KaseCD is the difference between the KasePO and its average, just as the MACD is the difference between an exponential

moving average oscillator and its average. Because the KaseCD automatically adapts to changing market conditions, it can be seen to generate cleaner crossover signals and more reliable divergences than the MACD.

Automated Divergence Function - The KasePO and KaseCD include an algorithm that automatically draws bullish and bearish divergences between peaks on the price chart. This highly sophisticated function will also trigger alerts if enabled through TradeStation whenever a divergence is plotted. Divergences for the KasePO are defaulted to plot as green lines and for the KaseCD as red lines

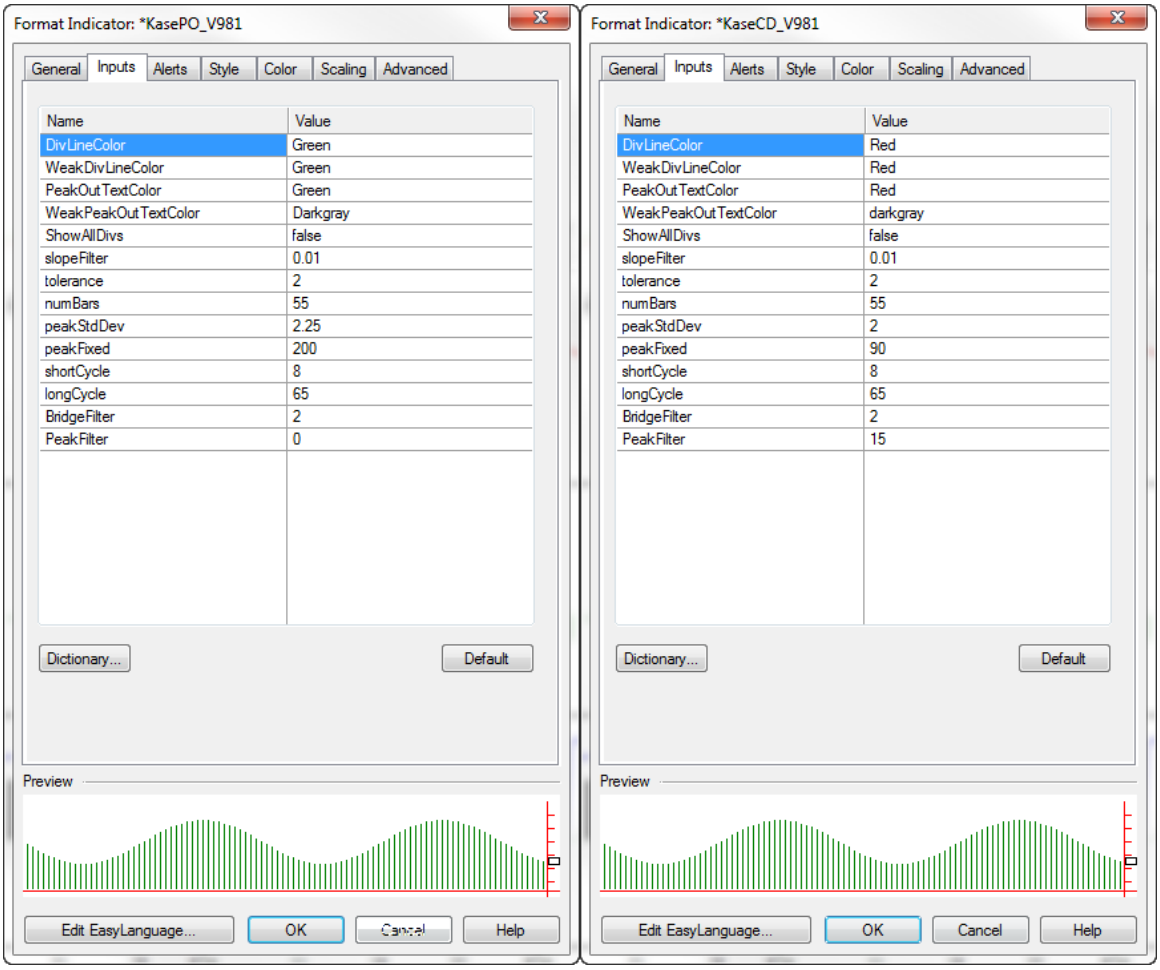
4.1.3.1 KasePO and KaseCD Inputs

`ShowAllDivs`: Many times, after a divergence has taken place, additional divergences will form from the same starting peak. Setting `ShowAllDivs` to true will show all the divergences from a given starting peak. Setting `ShowAllDivs` to false will show only the most recent divergence from a given starting peak

`slopeFilter`: Rounded or insignificant histogram peaks can be filtered out by requiring a certain slope, in terms of percent of the histogram value to be met. If that slope is less than `slopeFilter`, the peak is considered too shallow and is filtered out. A setting of 0 filters out no peaks. A filter of 0.01 filters out all peaks less than 1% higher than the surrounding data.

`tolerance`: For divergences or PeakOuts to be valid, peaks in price and momentum must occur within a certain number of bars or "tolerance" of each other, but not necessarily on the same bar. The input variable `tolerance` represents the maximum number of bars allowed between price and histogram peaks for a valid divergence or PeakOut signal. A default of 3 is set based on optimization tests. Increasing `tolerance` will generate more signals and vice versa.

`numBars`: This is the maximum number of bars between the swing highs or lows used to determine divergence. So a setting of 40 means that divergence peaks that are within 40 bars of each other will show on the screen, and those farther apart will not. Increasing numBars will generate more signals and vice versa.



`peakStdDev`: This is the number of standard deviations of the local data used to calculate PeakOut levels. Increase the number of standard deviations to make the PeakOuts less sensitive, and take place less often, and vice versa.

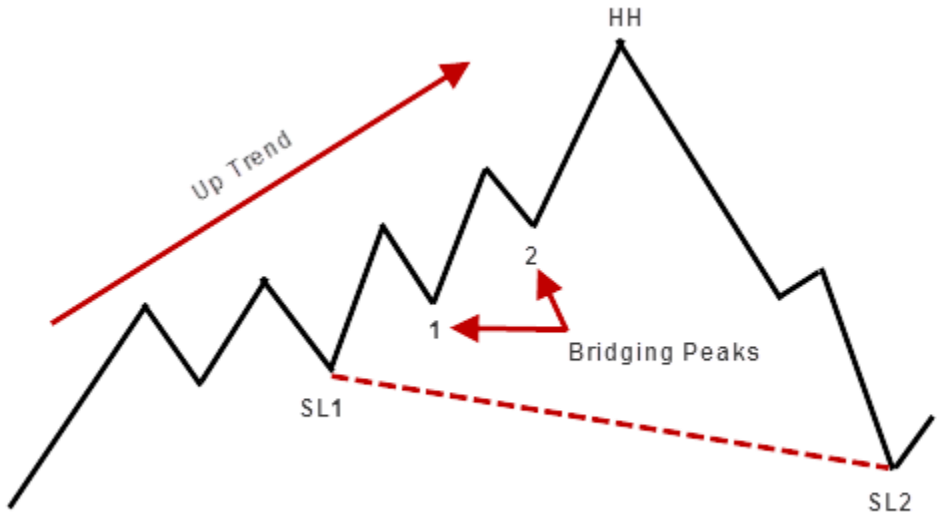
`peakFixed`: This is a baseline based on historical studies to calculate PeakOut levels. Increase this setting to make the PeakOuts less sensitive and vice versa.

`shortCycle` and `longCycle` control the range of shortest and longest cycle lengths used to determine significant trend. During very trendy markets, lengthen the settings, and during choppy oscillating markets shorten them.

`BridgeFilter`: Bridging is a filter that is used to ensure that the price peaks for a divergence are taking place in the same general trend/direction. The `BridgeFilter` is the number of

allowable swings that take place between the beginning peak and high/low peak of a divergence range. The illustration below shows the peaks/swings that the filter checks for a bullish divergence. The logic is the opposite for bearish divergence.

In this illustration the SL1 (Swing Low 1) and SL2 (Swing Low 2) are price swings that are being compared for divergence by Kase's divergence algorithm (momentum is not shown, but is assumed to be rising for a bullish divergence like this). The bridging filter checks the number of swings (or peaks) between SL1 and HH (highest high between SL1 and SL2). If the number of bridging peaks is equal to or greater than the value set for `BridgeFilter` then the divergence is considered to be bridging and is nullified.



The idea here is that SL1 was a swing that took place during an uptrend and SL2 took place during a downtrend. Therefore, the two swing lows should not be compared for a valid divergence signal.

Setting `BridgeFilter` to zero (0) will nullify all divergences. The higher these variables are set, the more swings the algorithm will allow between SL1 and HH.

`PeakFilter`: This is the minimum histogram value that the momentum must overcome to be used as a measuring peak for momentum divergence and overbought/oversold signals like PeakOuts and KCDpeaks.

4.1.3.2 KasePO Color and Style Defaults

Plot name	Description	Color:	Type:
KPOPeak	Histogram Peak	Black	Histogram
PO	Histogram No Peak	Dark Green	Histogram
PeakOut Line	Overbought or oversold conditions	Blue	Line

4.1.3.3 KaseCD Color and Style Defaults

Plot name	Description	Color:	Type:
KCDPeak	Histogram Peak	Red	Point
KCD	Histogram	Dark Green	Histogram
PeakOut Line	Overbought or oversold conditions	Magenta	Histogram

4.2 Background Indicators

4.2.1 The Kase Permission Stochastic (*KPermSto_v981)

Trades taken in the direction of the major trend tend to be more successful than trades against the trend. Thus, it's good practice to screen trades with a longer bar length filter. However, this takes time and waiting for longer bars to complete can delay profitable entries. To address these difficulties, the Permission Stochastic was developed. The algorithm behind the indicator

computes a synthetic longer bar length that updates upon the completion of each shorter bar, and calculates a moving Stochastic, that can be used to effectively screens trades on a longer bar length.

4.2.1.1 Kase Permission Stochastic Inputs

`multiplier` determines the number of shorter bars included in the longer bar length used in the Permission Stochastic. Higher values result in more short bars being used in the calculation of the longer bars. For example, if using a 20 minute bar for trading, a setting of "3" would result in a longer bar length of 60 minutes. t. The longer the higher-level filter multiplier, the less sensitive the indicator will be to shorter-term price action. The default input is 5.

`length` is the number of longer bars used to calculate the Permission Stochastic. Its default value is 9. To slow the indicator and make it less sensitive, increase the Stochastic `length` by changing it from 9 to a higher value, such as 13. To speed up the indicator, do the opposite.

4.2.1.2 Kase Permission Stochastic Color and Style Defaults

Plot name	**Definition**	**Color:**	**Type:**
PermK	Equivalent of Slow K	Dark magenta	Broken line
PermD	Equivalent of Slow D	Black	Solid line

4.2.2 The Kase Permission Screen (*KPermFunction_v981)

The Permission Screen interprets the Permission Stochastic by simply displaying one color when the filter is in a status where long trades may be taken "Permission Long" and another for Permission Short using some simple rules that relate to the level of the K and D lines and their relationship. The user should note that this indicator is embedded in the entry indicators and is not necessary or even recommended to use in normal timer or position charts. If the Permission Screen histogram is green, long trades on the normal bar length chart may be taken. If the

Permission Screen histogram is dashed dark magenta, then short trades on the normal bar length chart may be taken.

4.2.2.1 Kase Permission Screen Inputs:

The inputs are the same as for the Permission Stochastic.

4.2.2.2 Kase Permission Screen Color and Style Defaults:

Plot name	**Definition**	**Color:**	**Type:**
PermLong	Equivalent of PermK	Dark green	Histogram
PermShort	Equivalent of PermD	Dark magenta	Broken histogram

4.2.3 KaseSwing (*KaseSwing_v981)

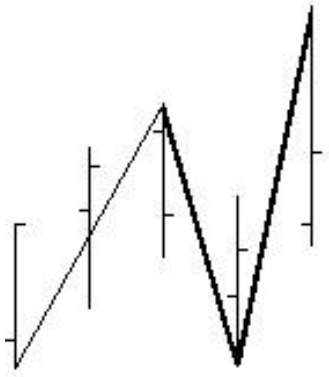
KaseSwing is built into many of the Kase algorithms, including KEES, the KaseCD and the KasePO to identify swings and highs and lows needed for determining valid entries and divergences. The indicator itself may be used by Kase to define both swing lines and waves.

KaseSwing identifies each bar as either a falling or rising bar. A falling bar is defined as a bar that has a lower low than the previous bar, or a rising bar, which has a higher high than the last bar. Note that outside bars, those that make a higher high and lower low than the last bar, are counted as both rising and falling bars. Inside bars, those that do not make a higher high or lower low that the last bar, are ignored. There are specific rules and settings for handling both outside and inside bars.

A running count of rising and falling bars is kept and updated for each new bar. This count is used to find the detail or resolution of the swings and is controlled by an input called MinSize that controls the sensitivity of the swings drawn. This means that after a swing has formed, MinSize numbers of bars are needed to draw the next swing.

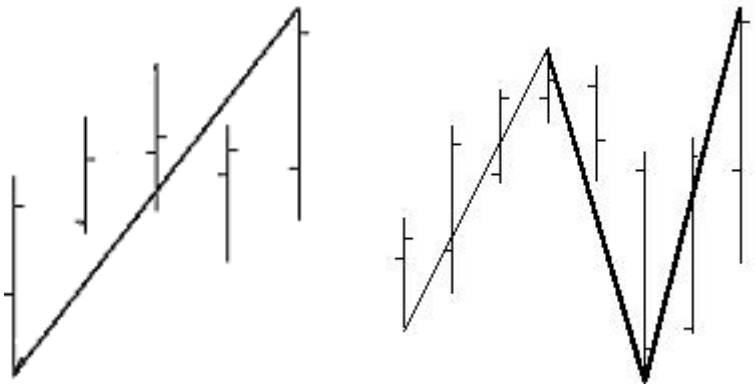
As shown in the chart below, after a high swing formed, there was one falling bar and then one rising bar. Because MinSize = 1 a swing can be drawn at the low of the falling bar and the high of the rising bar.

Drawing MinSize = 1



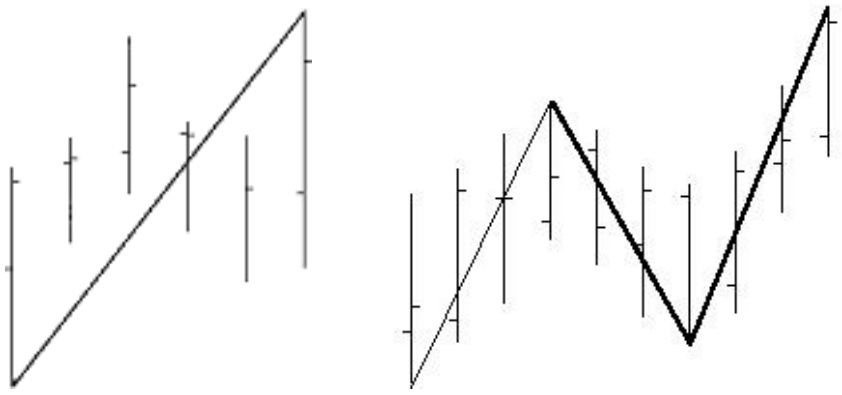
If the MinSize = 2 there must be two falling bars and two rising bars in order for a swing to be drawn, as shown in the right sketch. Otherwise, as shown on the left, if there is only one falling bar and then another rising bar no swing is drawn.

Drawing MinSize = 2



For MinSize = 3 the same rules as above apply, but in this case there must be at least three rising or falling bars before a swing can be drawn.

Drawing MinSize = 3



By default a Size of "2" is normally used, but "1" and "3" are commonly used as well. The lower the number the more detail the indicator shows.

4.2.3.1 KaseSwing Inputs

`MinSize`: changes the tolerance for the number of bars that must take place between high and low swings. The most sensitive setting is 1. Settings of 2, which is the default, and 3 are also allowable. A setting of 3 is the least sensitive.

`ConsiderInsides`: uses special inside bar rules when drawing swings.

`TextColor`: changes the color of text on the screen that labels the swings

`DecimalFormat`: There are some commodities that don't trade in the normal decimal convention. Setting `DecimalFormat` to –1 will automatically display the text labels in the correct units and precision. A setting of 0 displays the text labels in decimals regardless of the units displayed on the chart, and automatically finds the correct precision. A setting greater than 0 will display that many decimals, regardless of the precision or units of the chart.

`TLColor`: changes the trend line color.

`TextOn`: turns swing labels on or off.

`LineOn`: turns lines on or off.

`LineSytle`: controls style of lines that are drawn between swings.

4.2.3.3 KaseSwing Color and Style Defaults

All colors and styles for KaseSwing are controlled by the inputs described above.

4.2.4 The Kase Reversal Amounts (*KRev_v981 T and K)

KRev plots the absolute value of the stop amounts – the amount in dollars and/or cents of a reversal that must take place to hit the warning, Dev1, Dev2, and Dev3 lines. The standard deviation settings are the same as the respective K and T versions of the DevStops.

4.2.4.1 Kase Reversal Amounts Inputs

The inputs for KRev are the same as for the Kase DevStops, expect that it does not include BarsInFMA or BarsInSMA.

`NumBars`, `Dev1`, `Dev2`, and `Dev3` are all as described above for the Kase DevStops Indicator.

4.2.4.2 Kase Reversal Amounts Color and Style Defaults

Plot name	**Description**	**Color:**	**Type:**
Warn	Warning Line Reversal	Dark Red	Solid line
Rev1	First Level Reversal	Dark Blue	Solid line
Rev2	Second Level Reversal	Dark Blue	Solid line
Rev3	Third Level Reversal	Dark Blue	Solid line

4.3 Candlestick Indicators

Kase color-codes five important candlestick patterns for easy identification. Candlestick patterns can be used to identify danger of possible turns, to confirm turns, determine support and resistance points, to accelerate exits. Given that meaningful reversals generally take place at the top or bottom of extended moves or trends, to filter out patterns occurring after less meaningful moves, Kase's filters candlestick patterns with the Stochastic, only identify the patterns meeting "overbought" (bearish) or "oversold" (bullish) conditions. These patterns are especially significant when accompanied by divergences and/or PeakOut signals.

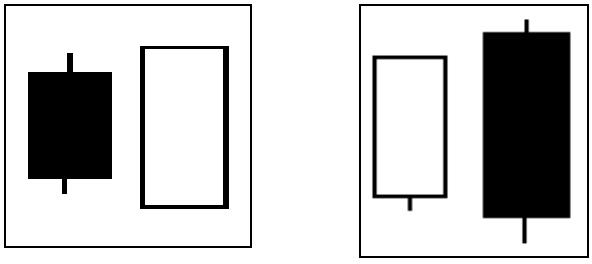
4.3.1 Candlestick Inputs

`Thold` identifies the overbought and oversold thresholds used in the in the slow Stochastic filter. A default of 75 means that bearish formations will only be identified when the Stochastic is above 75 and bullish formations below 25. A `Thold` value of 90 would identify candlestick patterns only if the Stochastic is above 90 or below 10. The lower the setting, the fewer patterns will be filtered. Setting `Thold` to 0 turns the filter off so that all patterns are identified.

4.3.2 The Kase Engulfing Candlestick Lines (..KaseEngulfing_v981)

Bullish and bearish engulfing lines entirely "engulf" the previous candlestick as shown below. The Engulfing line opens beyond the previous bar's close and closes beyond the previous bar's open.

Bullish Engulfing **Bearish Engulfing**



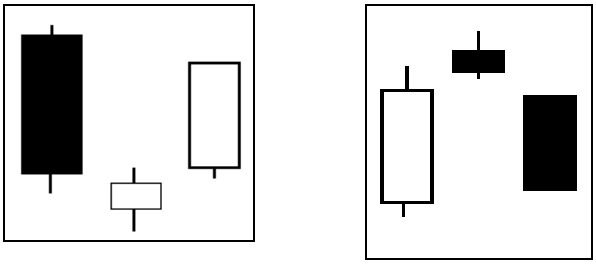
4.3.3.1 Color and Style Defaults:

Plot name	Description	Color:	Type:
Bullish engulf	Bullish Engulfing line	Dark blue	Cross below low
Bearish engulf	Bearish Engulfing line	Dark blue	Cross on high

4.3.4 The Kase Evening & Morning Star (..KaseEveMrnStr_v981)

This three-bar candlestick pattern includes a Harami line, which is a large body candlestick, in the direction of the original trend, a gap, which is usually an exhaustion gap, a star followed by another gap, usually a breakaway gap, and then another Harami line in the opposite direction. For this pattern to be considered complete the second Harami line must close at or beyond the midpoint of the initial Harami line's body.

Morning Star - Bullish **Evening Star - Bearish**



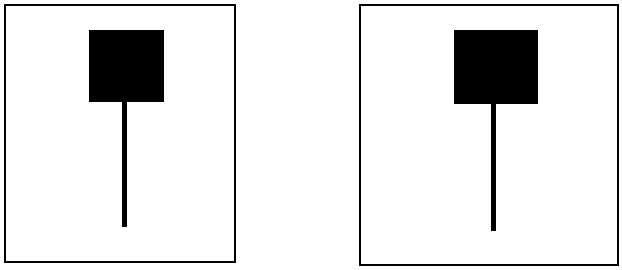
4.3.4.1 Color and Style Defaults:

Plot name	Description	Color:	Type:
MorStar	Morning Star	Red	Cross below low
EveStar	Evening Star	Red	Cross on high

4.3.5 The Kase Hammer and Hanging Man Patterns (..KaseHamHang_v981)

These patterns are stars with long lower shadows. A hammer occurs after down moves and is bullish and the Hanging Man occurs after up moves and is bearish. Often these patterns are leading indicators that occur two or three bars prior to a reversal. Also, they are often found as components of larger patterns such as morning and evening stars.

Hammer - Bullish **Hanging Man - Bearish**



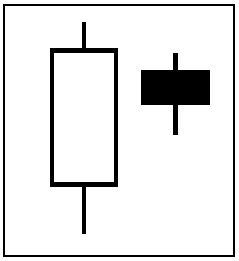
4.3.5.1 Color and Style Defaults:

Plot name	**Description**	**Color:**	**Type:**
Hammer	Bullish Hammer	Yellow	Cross on low
HangingMan	Bearish Hanging Man	Yellow	Cross on high

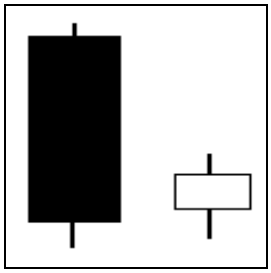
4.3.6 The Kase Harami Line and Stars (..KaseHarami_v981)

A Harami line and star is a two bar pattern. It consists of a Harami line followed by a star, where the body of the star is within the body, the open close range, of the Harami line.

Harami Line & Star - Bearish



Harami Line & Star - Bullish



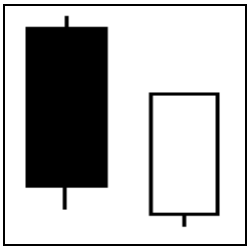
4.3.6.1 Color and Style Defaults:

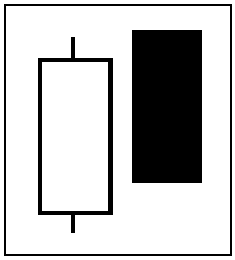
Plot name	**Description**	**Color:**	**Type:**
BearHarami	Marks pattern	Green	Cross below low
BullHarami	Marks pattern	Green	Cross above High

4.3.7 The Kase Piercing and Dark Cloud Cover (..KasePierDkC_v981)

These patterns are similar to engulfing line, except here, the second Harami line only must close at or beyond the midpoint of the first Harami line's body. A piercing pattern is similar to a bullish engulfing line, and a dark cloud cover similar to a bearish engulfing line.

Piercing Pattern - Bullish **Dark Cloud Cover - Bearish**





4.3.7.1 Color and Style Defaults:

Plot name	**Description**	**Color:**	**Type:**
Piercing	Bullish Piercing Pattern	Dark red	Cross below low
DarkCld	Dark Cloud Cover	Dark red	Cross above high

CHAPTER 5 - Trading Guidelines

5.1 Introduction to Trading with StatWare

StatWare is a set of trading indicators that can be combined in a systematic manner. The guidelines below are meant to give guidance as to how to put together an initial system to get started. Once comfortable with StatWare, you can modify our suggested guidelines to suit your individual style. The guidelines outlined revolve around three basic steps: Entering the trade, managing the trade and exiting the trade.

5.2 Setting Up Charts

Initially charts should be setup according to the guidelines in Chapter 2, Sections 2.1 through 2.5. Once comfortable with the default chart setups, make sure the risk associated with the charts is consistent with your risk tolerance.

For instance when trading the e-mini S&P 500 if you only want to risk 10 points per trade then you should set up your charts so that Dev3 (from *KDevStops_v981 T and K) on the chart you are using for exits, usually the normal monitor, is no larger than about 10 points. This can easily be assessed by using *KRev_v981 T and K to monitor the value of Rev3 (the amount of risk carried by Dev3). From this point you may refer back to Chapter 2 to setup your fast monitor and timing charts accordingly. If Dev3 on the normal monitor carries more than 10 points of risk then a shorter bar length is required. Once the normal monitor, fast monitor and timing chart have been chosen it is time to add indicators as outlined in Chapter 2, Sections 2.6 through 2.9.

5.3 Entering a Trade

The KEES indicator shows entry signals. As described earlier in Section 4.1.2, small points are used on bars that do not have the proper structure to allow an entry, for example, a first class buy bar with a down close, or a lower high or low. Large points are used on bars that do have the proper structure to allow an entry such as a first class buy bar that had a higher high, higher low

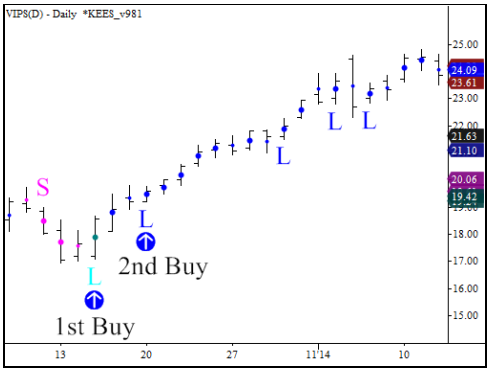
and closed up. Further the indicator marks first and second buy and sell signals to make identifying entries easier.

A first signal is the initial instance of a long or short signal. A second buy signal is one that occurs after a pullback wherein the previous swing low is held. A second sell signal is one that occurs after a pullback wherein the previous swing high is held. Both first and second signals are also marked with an 'L' for buy signals and an 'S' for sell signals. Kase recommends waiting for second signals most of the time, however, valid entries can be used at any time when traders wish to exercise discretion.

5.3.1 Initiating a Trade from a Flat Position

Entries are normally taken on the fast monitor chart. This is the shortest bar length chart and is the most active. Look for an L followed by an L or an S followed by an S, where the swing high or low holds the initial swing high or low. The chart below shows a first buy signal followed by a pullback and then a second buy signal.

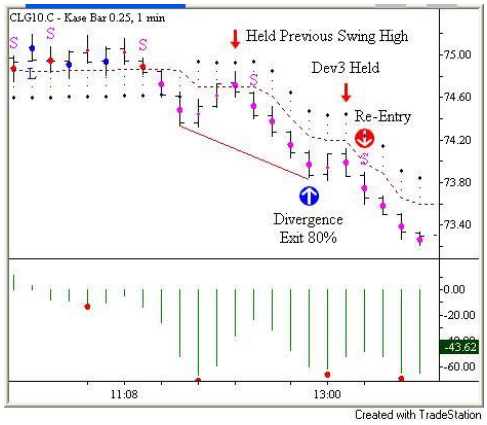
Second Buy Signal



5.3.2 Re-Entry System

After an exit of any volume, if Dev3 has not been broken and there is a new valid entry with an 'L' or 'S' consecutive to an earlier L or S, get back in. In the example below a bullish divergence prompts an exit of 80% (see Section 5.6.2) and stops are pulled into Dev1 for the remaining 20%. A new "S" is generated, while Dev3 holds and the previous swing high holds. Upon this sell signal the position is re-entered fully.

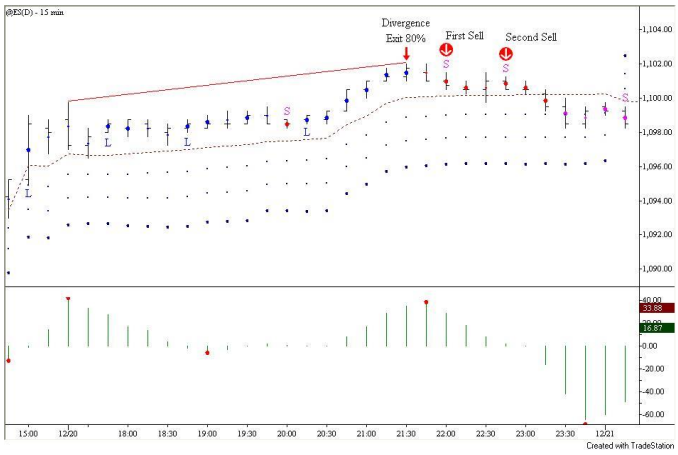
Re-Entry Signal



5.3.3 Reversal Signals

Similar to the re-entry signal after a partial exit has been taken as described in Section 5.6, should there be second entry signal generated on the timing chart in the opposite direction of the original trade before stops are hit then a reversal can be taken. The chart below shows an 80% exit after a divergence (see Section 5.6.2), and then a second sell signal before Dev1 is hit. At this point the remainder of the long trade is exited and a short trade is established.

Reversal Signal



5.4 Placing and Managing Stops

After entering a trade, an “emergency” stop should always be placed at Dev3. The other stop levels, as well as stops based on candlesticks may then be used to manage the risk if exit setups

and exit signals are triggered. These danger and exits signals, and the suggested stop levels should danger or exit signals take place, are set forth below in Section 5.6.

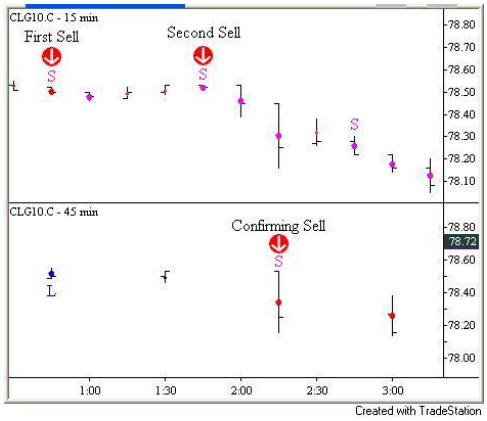
5.5 Scaling Up

Once a trade has been entered and at stop placed at Dev3 monitor for exits as described in Section 5.6 on the timing chart. At the same time check the fast monitor for a confirming entry signal in the direction of the trade (i.e. long or short). Once a confirming signal is received on the longer bar length, the trade can be scaled up to that chart by moving the stop to the respective Dev3 for the fast monitor. The fast monitor may then be used to watch for exits. Now begin to look for a confirming entry signal on the normal monitor chart and repeat the scaling process.

The goal is to continue scaling a trade to longer bar lengths so that premature exits or whipsaws can be avoided and profits can run as markets trend. More risk is taken when stops are moved to Dev3 on the longer bar lengths, but the confirming entry signals usually indicate the market is continuing to move in the profitable direction. If no confirming signal is triggered on the longer bar lengths and there is an exit signal generated, drop back to the flat position and monitor for a reentry as set forth in Section 5.3.1.

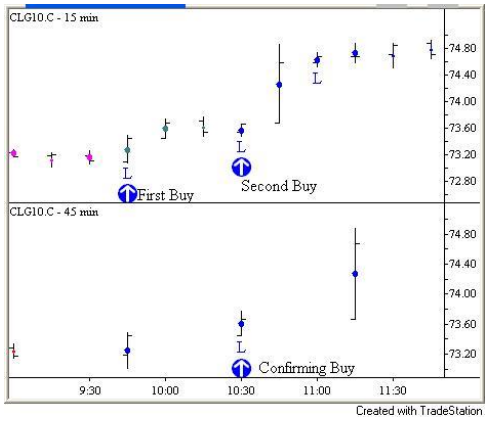
The chart below shows a scaling situation where the confirming entry signal comes after a trade has been entered. A 15-minute chart is shown on top and the 45-minute chart on the bottom. Here a second sell signal triggered a short entry at 1:45 PM. On the next 45-minute bar at 2:15 PM a confirming sell signal formed. Confirming signals must be designated by an ‘S’ for short and an ‘L’ for long, but can be first signals. At that point the trade is scaled to the 45-minute chart and the stop placed at Dev3, and accelerated thereafter as appropriate.

Scaling Up – Confirmation Late

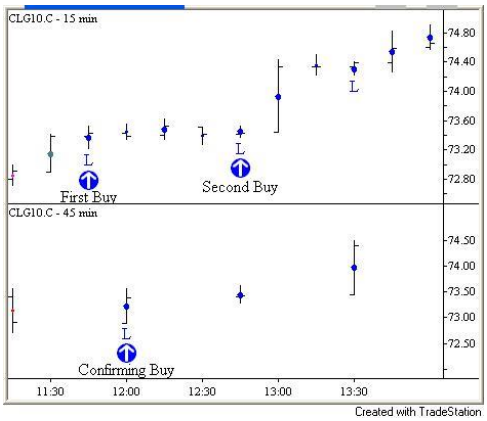


The confirmation signal does not always come after the entry signal. As shown on the left below, the confirmation signal formed on the same bar as the second entry signal. In this case the trade can be scaled to the longer bar length upon entry.

Scaling Up – Confirmation Same



Scaling Up – Confirmation Early



It is rare, but in some instances the confirmation signal will trigger before the second buy signal on the smaller bar length. This is shown in the chart on the right above. In this case, once the second buy has been triggered on the timing chart, and a trade entered long, it can be immediately scaled to the longer bar length.

5.6 Exiting a Trade

For exits use of three Kase indicators is recommended. These indicators are the KasePO, the KaseCD, and the DevStops. The KasePO and KaseCD are used to identify potential turns through divergences, PeakOuts and KCDpeaks. The DevStops are used to identify exit points. As discussed earlier, anytime a trade is entered a stop is placed at Dev3 by default. Tighter stops are used to manage risk when there are danger or exit signals present.

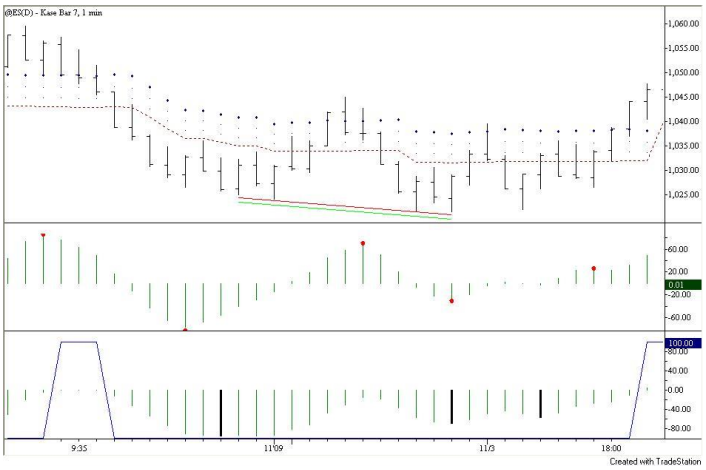
There are five exit strategies that are normally used. These signals are listed below in order of importance (highest to lowest), and a higher strategy overrides a lower. For example a dual divergence with a KCDpeak calls for a 100% exit even though a KCDpeak alone only calls for 50%. If there is a KCDpeak and an early PeakOut, then 50% is exited right away even though the PeakOut only calls for one-third at Dev1. The Recommended Action column shows how much of a trade should be exited and what stop(s) should be used after the signal takes place.

	Signal Description	**Recommended Action**
1.	Dual Divergence: on KasePO AND KaseCD	100%
2.	Divergence on KasePO OR KaseCD OR PeakOut late in the direction of the dominant trend	80% + Dev1
3	Any KCDpeak	50% + Dev1
4.	PeakOut early in the trend	Dev1, 2 and 3 equally
5.	No Signal	100% at Dev3

5.6.1 Exit Signal 1 - Divergence on KasePO AND KaseCD

Whenever there is a dual divergence, that is divergences on the KaseCD AND the KasePO, exit 100% of the trade. This is the strongest signal found in Kase's studies. Dev1 is hit 95% of the time following this signal.

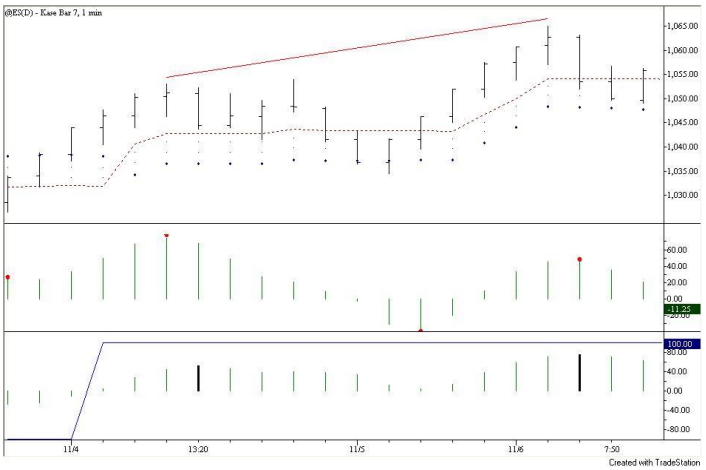
Exit Signal 1 - KasePO AND KaseCD Divergence



5.6.2 Exit Signal 2A – Single Divergence on KasePO OR KaseCD

Whenever there is a divergence on the KaseCD OR the KasePO (but not both), exit 80% of the trade and pull stops in to Dev1 for the remaining 20%. Dev1 is hit 83% of the time following this type of signal.

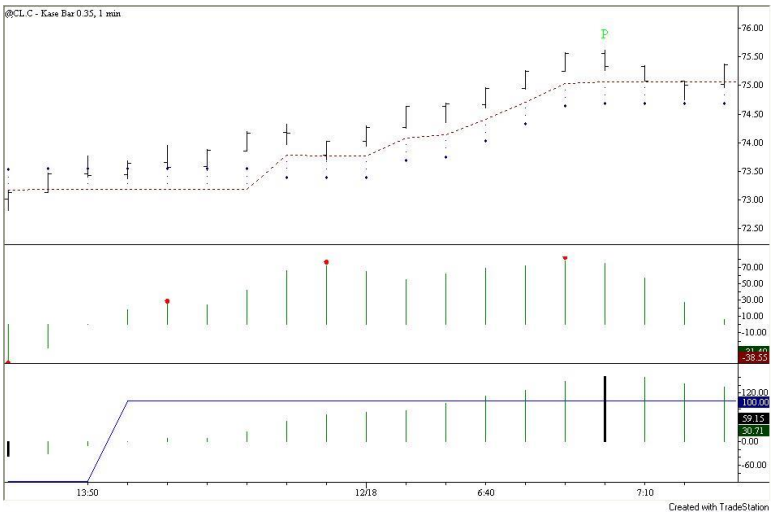
Exit Signal 2A - KasePO OR KaseCD Divergence



5.6.3 Exit Signal 2B - PeakOut Late In the Direction of Trend

Whenever there is a PeakOut late in the direction of the trend exit 80% of the trade and pull stops in to Dev1. Following this signal, Dev1 has been hit 79% of the time.

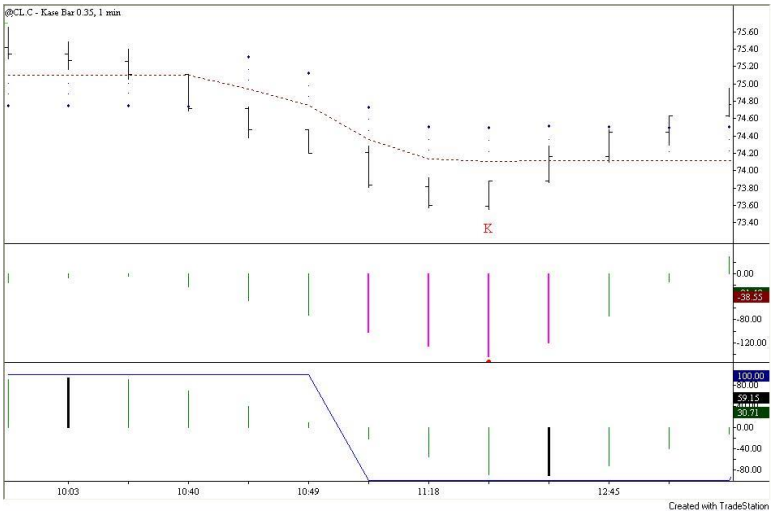
Exit Signal 2B - PeakOut late in trend



5.6.4 Exit Signal 3 - KCDpeak

Whenever there is a KCDpeak with no divergence exit 50% of the trade and pull stops in to Dev1. Following the KCDpeak, Dev1 is hit 52% of the time.

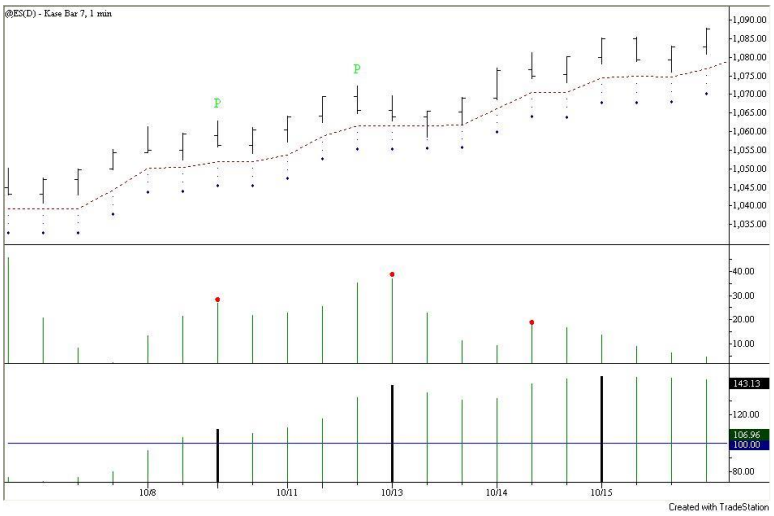
Exit Signal 3 - KCDpeak



5.6.5 Exit Signal 4 - PeakOut Early In the Direction of Trend

Whenever there is a PeakOut early in the direction of the trend (often following a sharp correction), stops are set to exit one third of the position at each of the three DevStops. In Kase's study, Dev1 was hit only 37% of the time following this signal, so taking an exit will many times result in a reentry just a few bars later. By pulling in stops and scaling out at Dev1, 2 and 3, exits are consistent with the observed probability of turns.

Exit Signal 4 - PeakOut early in trend



5.6.6 Exit Signal 5 – No Signal

Though rare, there are times when the market will reverse direction without warning, i.e. a PeakOut, KCDpeak or divergence. When this happens a full exit is take at Dev3.

5.6.7 Inactivity Exit Guidelines

At times the market will stagnate at which point an exit can be considered. If there is no profit in the trade after five to eight bars, an exit may be taken due to inactivity.

5.6.8 Position Holders - Daily Chart Exit Rules and Stops

The guidelines outlined above pertain specifically to day traders. For the most part, these rules can also be applied to position holders (traders who hold a position for days to weeks), but with minor variations to placing stops and exits. Position holders can establish a trade by scaling up

from the normal monitor to the daily chart using the same scaling rules outlined in Section 5.5. Position holders can also use half- and third-day charts to monitor for exits and warning signals. The list below outlines some of the slightly modified guidelines for position holders.

1. When there are no exit signal setups, set default stop to Dev 3
2. Use candlesticks to accelerate stops as necessary (outlined in Section 5.7 below)
3. If there is no profit in the trade after 3 to 5 bars, exit on inactivity.

5.6.9 "Choppy Market" Trading Guidelines

Whenever the market is exhibiting corrective, sideways, or "coalescing" behavior, it is prudent to modify the standard trading guidelines as follows:

1. Trade lighter volume, e.g., 50% vs 100%.
2. Trade shorter bar lengths.
3. Exit more aggressively, e.g., 100% instead of 80%.
4. Default to Dev2 instead of Dev3.

5.7 Trading with the Kase Candlestick Indicators

In addition to the DevStops, Kase Candlesticks may be added to the trading strategy to fine-tune exits. Usually, Kase Candlesticks are only incorporated in the strategy when the equivalent of 90-minute bars or longer are being used. Note that the hanging man and hammer patterns cannot be used by themselves for exits, and so are not included in the discussion below.

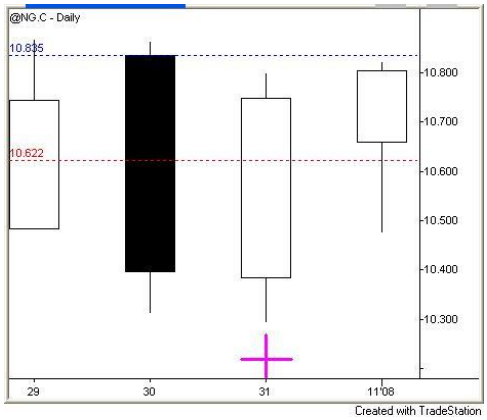
The concept with the candlesticks is that if a candlestick pattern is forming, the initial stops, either the warning line or Dev1, can be shifted to either the completion point –the midpoint of the initial Harami line, or the confirmation point – the open of the initial Harami line. When accelerating exits, for example, if the midpoint of the initial Harami line is being used instead of Dev1, then Dev1 would be used instead of Dev2, etc. Candlestick patterns should be taken into consideration, especially, if the pattern is coincident with a KCDpeak or PeakOut and/or divergence or setup(s).

5.7.1 The Kase Engulfing Candlestick Lines (..KaseEngulfing_v981) or The Kase Piercing and Dark Cloud Cover Candlesticks (..KasePierDkC_v981)

There is no way before the close of either pattern to see if the bar will close beyond the initial bar's open or only at or beyond the midpoint. When trading intra-day, with the exception of the last bar of the day, wait for the bar to complete to determine if the close satisfies candlestick pattern requirements. For the last bar of the day and for daily and longer bars, an assumption about the close a few minutes early in anticipation of the close may be made to accelerate exits.

The example below shows a bullish piercing pattern. One would anticipate that the market was going to close above the completion point (red) and accelerate the exit by changing Dev1 to the price at that point. Then if Dev1 was above the confirmation point (blue), the confirmation point would become Dev2, otherwise Dev1 would take the place of Dev2, etc.

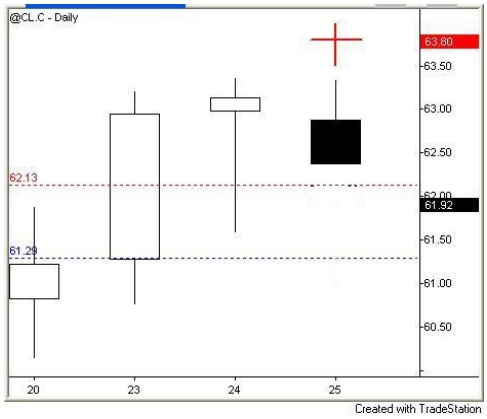
Bullish Piercing Pattern Accelerated Stops



5.7.2 The Kase Evening & Morning Star (..KaseEveMrnStr_v981)

After the formation of the first two candles – the Harami line followed by the star above or below the body of the Harami line - use accelerated stops. Both the completion and confirmation points can be used as shown in the chart below. The completion point replaces Dev1 and if Dev1 is above the confirmation point, the confirmation point replaced Dev2, otherwise Dev1 becomes Dev2 and so forth.

Evening Star Accelerated Stops

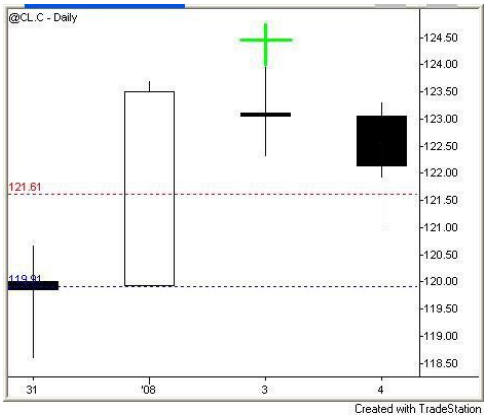


5.7.3 The Kase Harami Line and Star (..KaseHarami_v981)

In the case of the Harami Line and Stars, if the star's close is not at or beyond the midpoint of the Harami line, use the completion point for an exit on the next bar to accelerate exits. If the body straddles the midpoint or is below the midpoint, use the confirmation point on the next bar to accelerate exits. In the first example on the left, the bearish Harami line and star is not complete because the midpoint of the Harami line has held on a closing basis. Therefore, stops can be placed at the completion point and/or the confirmation point to accelerate exits.

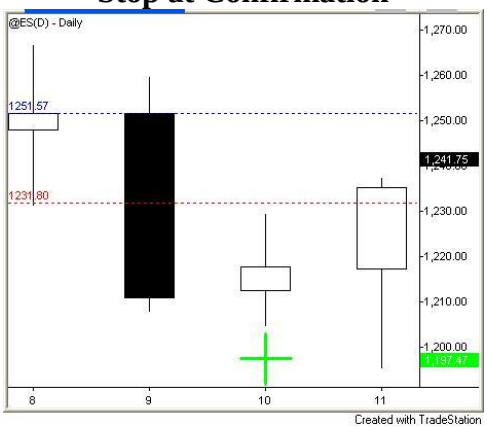
Bearish Harami Line and Star

Stops at Completion and Confirmation



Bullish Harami Line and Star

Stop at Confirmation



The example on the right shows an instance where the Harami line and star is completed, but not yet confirmed. Dev1 would be accelerated to the completion point. Dev2 would become the lower of Dev1 or the confirmation point.

CHAPTER 6 - Kase StatWare Functions

6.1 Introduction to Kase StatWare Functions

Kase StatWare is a discretionary system that follows guidelines, but does not abide by hard rules. The indicators are meant to enhance a trader's experience, and help them make well informed trading decisions. However, this does not mean that StatWare should not be used as a trading system, or to enhance a trading system. The Kase StatWare functions have been coded for use with custom indicators, strategies, and screeners. This document describes the variables and functions that are available.

6.2 Momentum Indicators: KasePO and KaseCD

Kase's momentums studies - the acclaimed KasePO and KaseCD catch market turns 60% more accurately than optimized traditional indicators. The studies are based on Kase's serial dependency index, which statistically measures the degree of non-random behavior, and self-optimizes both cycle length and volatility. Kase's momentum divergence algorithm embedded in both studies automatically displays completed and confirmed divergences and pinpoints discrete overbought and oversold signals.

6.2.1 KasePO

The KasePO is a first derivative momentum indicator that is used to measure the rate of change of price. Its signals are traditionally used to identify potential stalling and turning points. Kase uses the KasePO divergence and PeakOut signals as a warning or exit signal for profit taking opportunities.

Function Name	Return Type	Return Range	Description
KasePO_divergence	int	-2, -1, 0, 1, 2	KasePO divergence signal -2 = normal bearish -1 = weak bearish 0 = no signal 1 = weak bullish 2 = normal bullish
KasePO_peak	int	-2, -1, 0, 1, 2	KasePO PeakOut signal -2 = normal bearish -1 = weak bearish 0 = no signal 1 = weak bullish 2 = normal bullish
KasePO_value	double	N/A	momentum value of KasePO histogram
KasePO_poval	double	N/A	value of KasePO overbought/oversold threshold

6.2.1.1 KasePO_divergence

Bullish and bearish divergences are the strongest signals generated by the KasePO. Bearish divergences take place when prices rise to new price swing highs, are within numBars of one another, and line up within tolerance of momentum peaks that are declining (both momentum peaks must be positive). Bullish divergences take place when prices fall to new price swing lows, are within numBars of one another, and line up within tolerance of momentum peaks that are rising (both momentum peaks must be negative).

Variable	Default	Reasonable Range	Description
shortCycle	8	5 to 21	Minimum lookback for dynamic range
longCycle	65	34 to 144	Maximum lookback for dynamic range
slopeFilter	0.01	0 to 0.05	The percentage (0.01 = 1%) that a potential momentum peak's value has to be versus surrounding bars to be considered a momentum peak.
tolerance	2	0 to 4	Distance between price swing and momentum peak for divergences and PeakOuts to be valid
numBars	55	34 to 89	Number of bars between confirmed swings for divergences (lookback for divergence)
MaxBridgingPeaks	2	1 to 5	The number of swings that can take place for a divergence to be considered bridging. (See Bridging Illustration)
PeakFilter	0	0 to 25	Minimum value that momentum must overcome to be considered a potential peak.
id	1	0-32700	Identification number for DLL reference.

6.2.1.2 KasePO_peak

A PeakOut is a pinpointed overbought or oversold signal that is generated when the momentum value of the KasePO rises above the overbought/oversold threshold. The overbought/oversold threshold is the lesser of the peakFixed or the peakStdDev. When momentum peaks above this threshold and there is a price peak within tolerance a PeakOut will be triggered.

Variable	Default	Reasonable Range	Description
shortCycle	8	5 to 21	Minimum lookback for dynamic range
longCycle	65	34 to 144	Maximum lookback for dynamic range
peakStdDev	2.25	1 to 4	Standard deviations of momentum used to measure potential overbought/oversold conditions for PeakOut signals
peakFixed	200	100 to 300	Fixed overbought/oversold line. The overbought/oversold line for PeakOuts is the lesser of the peakFixed or the peakStdDev.
slopeFilter	0.01	0 to 0.05	The percentage (0.01 = 1%) that a potential momentum peak's value has to be versus surrounding bars to be considered a momentum peak.
tolerance	2	0 to 4	Distance between price swing and momentum peak for divergences and PeakOuts to be valid
PeakFilter	0	0 to 25	Minimum value that momentum must overcome to be considered a potential peak.
id	1	0-32700	Identification number for DLL reference.

6.2.1.3 KasePO_value

The value of the KasePO indicates the strength of momentum. The KasePO yields either positive or negative momentum, and has a zero line. It is normally plotted as a histogram. Unlike other momentum indicators it is not bound between 0 and 100.

Variable	Default	Reasonable Range	Description
shortCycle	8	5 to 21	Minimum lookback for dynamic range
longCycle	65	34 to 144	Maximum lookback for dynamic range
id	1	0-32700	Identification number for DLL reference.

6.2.1.4 KasePO_poval

The KasePO_poval (or PeakOut value) is the value of the overbought/oversold threshold for the KasePO. When momentum is positive the KasePO_poval is positive and an overbought threshold. When momentum is negative the KasePO_poval is negative and an oversold threshold. The KasePO_poval is the lesser of the peakFixed and peakStdDev values.

Variable	Default	Reasonable Range	Description
shortCycle	8	5 to 21	Minimum lookback for dynamic range
longCycle	65	34 to 144	Maximum lookback for dynamic range
peakStdDev	2.25	1 to 4	Standard deviations of momentum used to measure potential overbought/oversold conditions for PeakOut signals
peakFixed	200	100 to 300	Fixed overbought/oversold line. The overbought/oversold line for PeakOuts is the lesser of the peakFixed or the peakStdDev.
id	1	0-32700	Identification number for DLL reference.

6.2.2 KaseCD

The KaseCD is a second derivative momentum indicator that is used to measure the rate of change of the KasePO. The KaseCD is generally a faster and more sensitive momentum indicator than the KasePO. Its signals are traditionally used to identify potential stalling and turning points. Kase uses the KaseCD divergence and KCDpeak (or PeakOut) signals as a warning or exit signal for profit taking opportunities.

Function Name	Return Type	Return Range	Description
KaseCD_divergence	int	-2, -1, 0, 1, 2	KaseCD divergence signal -2 = normal bearish -1 = weak bearish 0 = no signal 1 = weak bullish 2 = normal bullish
KaseCD_peak	int	-2, -1, 0, 1, 2	KaseCD PeakOut signal -2 = normal bearish -1 = weak bearish 0 = no signal 1 = weak bullish 2 = normal bullish
KaseCD_value	double	N/A	momentum value of KaseCD histogram
KaseCD_poval	double	N/A	value of KaseCD overbought/oversold threshold

6.2.2.1 KaseCD_divergence

Bullish and bearish divergences are the strongest signals generated by the KaseCD. Bearish divergences take place when prices rise to new price swing highs, are within numBars of one another, and line up within tolerance of momentum peaks that are declining (both momentum peaks must be positive). Bullish divergences take place when prices fall to new price swing lows, are within numBars of one another, and line up within tolerance of momentum peaks that are rising (both momentum peaks must be negative).

Variable	Default	Reasonable Range	Description
shortCycle	8	5 to 21	Minimum lookback for dynamic range
longCycle	65	34 to 144	Maximum lookback for dynamic range
slopeFilter	0.01	0 to 0.05	The percentage (0.01 = 1%) that a potential momentum peak's value has to be versus surrounding bars to be considered a momentum peak.
tolerance	2	0 to 4	Distance between price swing and momentum peak for divergences and KCDpeaks to be valid
numBars	55	34 to 89	Number of bars between confirmed swings for divergences (lookback for divergence)
MaxBridgingPeaks	2	1 to 5	The number of swings that can take place for a divergence to be considered bridging. (See Bridging Illustration)
PeakFilter	15	0 to 25	Minimum value that momentum must overcome to be considered a potential peak.
id	1	0-32700	Identification number for DLL reference.

6.2.2.2 KaseCD_peak

A KCDpeak is a pinpointed overbought or oversold signal that is generated when the momentum value of the KaseCD rises above the overbought/oversold threshold. The overbought/oversold threshold is the lesser of the peakFixed or the peakStdDev. When momentum peaks above this threshold and there is a price peak within tolerance a KCDpeak will be triggered.

Variable	Default	Reasonable Range	Description
shortCycle	8	5 to 21	Minimum lookback for dynamic range
longCycle	65	34 to 144	Maximum lookback for dynamic range
peakStdDev	2	1 to 4	Standard deviations of momentum used to measure potential overbought/oversold conditions for KCDpeak signals
peakFixed	90	70 to 150	Fixed overbought/oversold line. The overbought/oversold line for PeakOuts is the lesser of the peakFixed or the peakStdDev.
slopeFilter	0.01	0 to 0.05	The percentage (0.01 = 1%) that a potential momentum peak's value has to be versus surrounding bars to be considered a momentum peak.
tolerance	2	0 to 4	Distance between price swing and momentum peak for divergences and KCDpeaks to be valid
PeakFilter	15	0 to 25	Minimum value that momentum must overcome to be considered a potential peak.
id	1	0-32700	Identification number for DLL reference.

6.2.2.3 KaseCD_value

The value of the KaseCD indicates the strength of momentum. The KaseCD yields either positive or negative momentum, and has a zero line. It is normally plotted as a histogram. Unlike other momentum indicators it is not bound between 0 and 100.

Variable	Default	Reasonable Range	Description
shortCycle	8	5 to 21	Minimum lookback for dynamic range
longCycle	65	34 to 144	Maximum lookback for dynamic range
id	1	0-32700	Identification number for DLL reference.

6.2.2.4 KaseCD_poval

The KaseCD_poval (or KCDpeak value) is the value of the overbought/oversold threshold for the KaseCD. When momentum is positive the KaseCD_poval is positive and an overbought threshold. When momentum is negative the KaseCD_poval is negative and an oversold threshold. The KaseCD_poval is the lesser of the peakFixed and peakStdDev values.

Variable	Default	Reasonable Range	Description
shortCycle	8	5 to 21	Minimum lookback for dynamic range
longCycle	65	34 to 144	Maximum lookback for dynamic range
peakStdDev	2	1 to 4	Standard deviations of momentum used to measure potential overbought/oversold conditions for KCDpeak signals
peakFixed	90	70 to 150	Fixed overbought/oversold line. The overbought/oversold line for PeakOuts is the lesser of the peakFixed or the peakStdDev.
id	1	0-32700	Identification number for DLL reference.

6.2.3 A note about Normal and Weak Momentum Signals

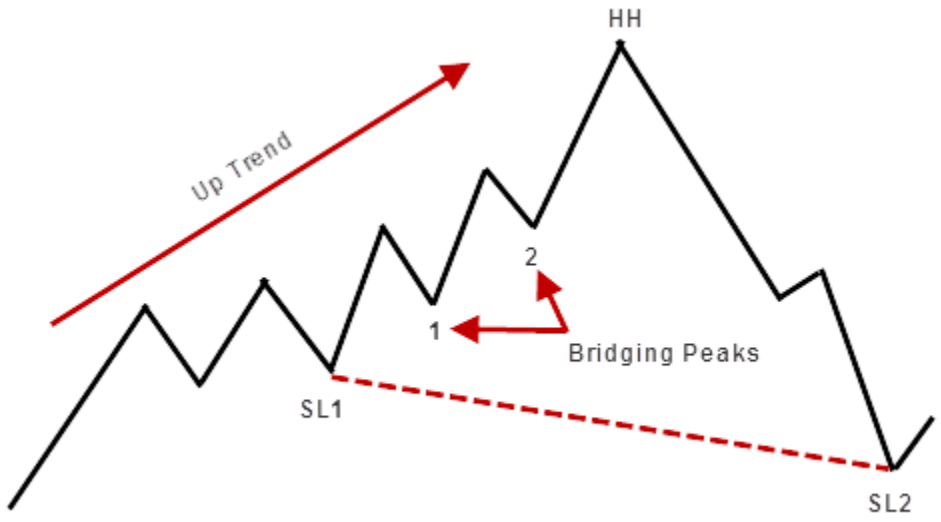
Note that there are two grades of signal for all divergence, PeakOut, and KCDpeak signals: normal and weak. A normal signal takes place when the confirming price bar closes in the direction of the signal. A weak signal is triggered when the confirming price bar closes against the direction of the signal.

For instance, if a bearish signal takes place, but the confirming price bar closes higher (close is greater than open), this would be triggered as a weak bearish signal. These signals do not typically perform as well as normal signals.

6.2.4 A Note about Momentum Divergence Bridging

Bridging is a filter that is used to ensure that the price peaks for a divergence are taking place in the same general trend/direction. The MaxBridgingPeaks is the number of allowable swings that take place between the beginning peak and high/low peak of a divergence range. The illustration below shows the peaks/swings that the filter checks for a bullish divergence. The logic is the opposite for bearish divergence.

In this illustration the SL1 (Swing Low 1) and SL2 (Swing Low 2) are price swings that are being compared for divergence by Kase's divergence algorithm (momentum is not shown, but is assumed to be rising for a bullish divergence like this). The bridging filter checks the number of swings (or peaks) between SL1 and HH (highest high between SL1 and SL2). If the number of bridging peaks is equal to or greater than the value set for MaxBridgingPeaks then the divergence is considered to be bridging and is nullified.



The idea here is that SL1 was a swing that took place during an uptrend and SL2 took place during a downtrend. Therefore, the two swing lows should not be compared for a valid divergence signal.

Setting MaxBridgingPeaks to zero (0) will nullify all divergences. The higher these variables are set, the more swings the algorithm will allow between SL1 and HH.

6.3 Entry Signals: Kase Easy Entry System (KEES)

Kase's StatWare takes a range of entry signals including swings, momentum crossovers, bar patterns and a higher bar length filter and condenses them into an easy to use system of colored dots – blue shades for upward biased and red for downward – with "L" for long and "S" for short triggers. With the technology underlying KEES signals are confirmed 40% earlier than those using traditional methods.

Function Name	Return Type	Return Range	Description
KEES_entry	int	-3, -2, -1, 0, 1, 2, 3	KEES entry signal -3 = first class short -2 = second class short -1 = warning short 0 = no signal 1 = warning long 2 = second class long 3 = first class long
KEES_status	int	-4, -3, -2, -1, 0, 1, 2, 3, 4	KEES bar status -4 = first class short entry -3 = first class short non-entry -2 = second class short entry -1 = second class short non-entry 0 = no status 1 = second class long non-entry 2 = second class long entry 3 = first class long non-entry 4 = first class long entry
KPermSto_permk	double	N/A	value of PermK (akin to Stochastic %K)
KPermSto_permd	double	N/A	value of PermD (akin to Stochastic %D)
KPermFunction	int	-1, 0, 1	status of longer bar length filter -1 = short 0 = neutral 1 = long

6.3.1 KEES_entry

KEES examines a series of momentum indicators, swings, bar lengths, and bar formations to color-code each bar and then decide which bars are permissioned for long or short entries. There are three classes of entries, warning, first class, and second class. A warning signal is the first

signal that takes place in a potential trend. Frist class signals are bars that are permissioned in the direction of the trend on both the bar length being used and the synthetic longer bar length filter (which is set by Multiplier). These signals are akin to the "L" or "S" that is shown when KEES is plotted on a chart.

Variable	Default	Reasonable Range	Description
Length	9	3 to 21	lookback for underlying synthetic longer bar length momentum filter
Multiplier	3		number of bars used to create synthetic longer bar length
id	1	0-32700	Identification number for DLL reference.

6.3.2 KEES_status

KEES examines a series of momentum indicators, bar lengths, and bar formations to color-code each bar and then decide which bars are permissioned for long or short entries. Every bar on the chart is color coded, but not all bars are permissioned for a potential entry. Bars are either permissioned as first or second class and as entry or non-entry. Frist class bars are permissioned in the direction of the trend on both the bar length being used and the synthetic longer bar length filter (which is set by Multiplier). These signals are akin to the color and dot size that is displayed on each bar when StatWare is plotted on a chart.

Variable	Default	Reasonable Range	Description
Length	9	3 to 21	lookback for underlying synthetic longer bar length momentum filter
Multiplier	3		number of bars used to create synthetic longer bar length
id	1	0-32700	Identification number for DLL reference.

6.3.3 KPermSto_permk and KPermSto_permd

KEES uses a synthetic bar length that is set by Multiplier to filter entries. The filter is a momentum indicator called KPermissionStochastic (KPermSto) that is applied to this synthetic longer bar length. The lookback length of KPermSto is set by Length. The KPermSto calculates a PermK and PermD line that are similar to the stochastic %K and %D lines.

Variable	Default	Reasonable Range	Description
Length	9	3 to 21	lookback for underlying synthetic longer bar length momentum filter
Multiplier	3		number of bars used to create synthetic longer bar length
id	1	0-32700	Identification number for DLL reference.

6.3.4 KPermFunction

The KPermFunction is a simplified version of the KPermSto that returns long or short permissions based upon the status of the PermK and PermD lines. When PermK is greater than PermD the permission is long. When PermK is less than PermD the permission is short.

Variable	Default	Reasonable Range	Description
Length	9	3 to 21	lookback length for underlying synthetic longer bar length momentum filter
Multiplier	3		number of bars to use to create synthetic longer bar length for filter
id	1	0-32700	Identification number for DLL reference.

6.4 Rigorous Exit System: The DevStops

The ideal stop is one that best balances letting profits run while cutting losses. Kase's DevStops evaluate not only average market range but distribution and variability of the range to set optimal stop/exit points statistical probabilities. Thus, DevStops are set at points at which there is an increasing probability of reversal against the trend being statistically significant.

Function Name	Return Type	Return Range	Description
KDevStops_price	double	N/A	Returns stop value (added to low or subtracted from high)
KRevAmounts_value	double	N/A	Returns raw stop reversal value

6.4.1 KDevStops_price

The KaseDevStops are plotted as either long stops (below the market and subtracted from the most recent swing high), or short stops (above the market and added to the most recent swing low). The long/short crossover is controlled by a simple moving average crossover that is set using BarsInFMA (fast moving average) and BarsInSMA (slow moving average). When the value of BarsInFMA is greater than BarsInSMA long stops (below the market) are returned. When the value of BarsInFMA is less than BarsInSMA short stops (above the market) are returned.

The StandardDeviations variable can be set to 0 for the warning line, 1.1 for Dev1, 2.2 for Dev2, and 3.6 for Dev3. Other values of StandardDeviations may also be used for wider and narrower stops as deemed appropriate by the user.

Variable	Default	Reasonable Range	Description
NumBars	30	5 to 50	number of bars for double true range calculation
StandardDeviations	0	0 to 10	number of standard deviations of double true range
BarsInFMA	10	5 to 21	Fast moving average lookback (crossover for long-short stop flip). When FastMA > Slow MA long stop is returned, vice versa for short stop.
BarsInSMA	21	13 to 55	Slow moving average lookback (crossover for long-short stop flip). When FastMA > Slow MA long stop is returned, vice versa for short stop.
id	1	0-32700	Identification number for DLL reference.

6.4.2 KRevAmounts_value

The reversal value used for Kase DevStops is simply the number of standard deviations of the average true range over NumBars. This value is then added to lows for short stops or subtracted from highs for long stops. This value can be used to calculate stops in either direction at any time (like a training stop).

Variable	Default	Reasonable Range	Description
NumBars	30	5 to 50	number of bars for double true range calculation
StandardDeviations	0	0 to 10	number of standard deviations of double true range
id	1	0-32700	Identification number for DLL reference.

CHAPTER 7 - Troubleshooting

7.1 General Problems

For problems not directly related to using Kase's indicators, please check your TradeStation™ user's manual or call TradeStation™ technical support.

7.2 Indicators Coming Up Zero, Nothing Is Plotting

If all of your indicators are coming up zero, then your PASSWORD has most likely expired. Phone the Kase Call Center at 505-237-1600 or email kase@kaseco.com and we will arrange for an update of your PASSWORD consistent with your contractual arrangements with us. See Chapter 4 to change your password. Please be aware of the expiration date of your software. If any indicator is coming up zero while others are not, see *Indicator May Not Have Enough Bars* below.

7.3 Indicator has been added but is Not Plotting

Indicator May be "Off" – Your indicator may be turned to "off". To check, under the ***Format*** menu, click on ***Analysis Techniques*** and make sure that the indicator is turned "On" by checking the Status column. If the Status is "Off", highlight the indicator and click the ***Status*** button on the right hand side of the box to turn it on.

Indicator May Not Have Enough Bars –Under the ***Format*** menu, click on ***Analysis Techniques,*** click ***Format*** and then click on the ***Properties*** tab. Make sure the ***Auto-detect*** box is checked, if not, check it.

If this still does not work there may not be enough data on the screen to initialize the indicators. Under ***Format, Price Data, Settings,*** increase the number of days (weeks or months) shown in the chart.

7.4 Unable to See the Indicators Well

Our indicators are designed for use with a white background and black bars. Either change your background to white and bars to black, or change the indicators to colors suitable for whatever background you are using. This is done through the Style selection in the Format Indicator dialog box for the indicators themselves and through the Inputs selection in the Format Indicator dialog box for custom programmed displays. Through the Style selection, you may also make the indicators bolder, or redesign the style altogether. See Chapter 2.

7.5 My Indicators Take a Very Long Time to Initiate

Data Stream Too Long – For your normal monitor chart, you should most likely not need any more than about 50 days and for your timing chart, 20. If you have a long data stream, for example, 100 days of 5-minute bars, the computer needs to perform calculations for all 100 days.

Too Many Workspaces – Try opening fewer workspaces at once.

KaseBars using Ticks versus Minute – If you are using KaseBars with ticks, try selecting minute bars to build them.

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